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FINANCIAL TIMES

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NEWS SUMMARY

Iran cuts defence spending in its latest budget, because it expects to earn less from oil exports. It will also borrow more from abroad and reduce foreign aid.

Mr. Cyrus Vance, the U.S. Secretary of State, left Riyadh to-day to continue his Middle East fact-finding tour with the message that, in return for holding down the rise in crude oil prices, Saudi Arabia expects Washington to press Israel into an early peace settlement.

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Table with columns: FEATURES, ON OTHER PAGES, ANNUAL STATEMENTS

Saudi oil pressure on U.S. to force Israeli settlement

BY OUR OWN CORRESPONDENT: JEDDAH, FEB. 20

Mr. Cyrus Vance, the U.S. Secretary of State, left Riyadh to-day to continue his Middle East fact-finding tour with the message that, in return for holding down the rise in crude oil prices, Saudi Arabia expects Washington to press Israel into an early peace settlement.

Prince Saud al-Faisal, Saudi Arabia's Foreign Minister, was reported to have said in a broadcast on the eve of Mr. Vance's visit: "The Kingdom expects America to put pressure on Israel in the Arab cause."

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POLITICAL TESTS FOR CALLAGHAN... Ministers expect guillotine victory

Successor to Crosland named to-day

BY PHILIP RAWSTORNE

MINISTERS now appear confident of commanding a majority in tomorrow's crucial Commons vote for guillotining its controversial devolution legislation.

Mr. James Callaghan is to announce to-night the Cabinet changes made necessary by the death of Mr. Anthony Crosland, the Foreign Secretary.

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Mr. Healey: favorite for the post

Leyland cars group faces total shutdown

BY CHRISTIAN TYLER, LABOUR STAFF

BRITISH LEYLAND to-day faces the possibility of a complete shutdown in its cars group by the end of this week.

The last hopes of averting what could be the worst stoppage for years vanished at the week-end when unofficial leaders of 6,000 toolmakers, skilled men with a vital job in the manufacture of car parts and bodies, decided to go ahead with a strike that began on Friday afternoon.

Leyland starts the week with more than 20,000 of an estimated 30,000 hourly-paid carworkers laid off by other strikes, and only nine of its 18 car and van models being produced.

The figure could climb rapidly this week, the company warned last night, if the toolmakers' leaders receive the 80 per cent. support they are claiming.

£11m. office property deal

BY JOE RENNISON

LONDON AND Manchester Assurance has sold its offices in Finsbury Square, London, for £11m. to Canadian Pacific Steamships in one of the biggest property deals of its kind in the last few years.

The purchase is seen as another step in the trend of those large corporations seeking accommodation to buy freehold or long leasehold, rather than to rent.

If it continues, this trend could see a fall in the price paid for above-average-sized premises which are in short supply in the South-east and almost unobtainable in the City and West End.

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BSC stainless steel sales soar

BY ROY HODSON

BRITISH STEEL has scored an international success with the timing of its investment for doubling the production of high value stainless steels.

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BY PETRO... the Financial Times Monday February 21 1977... Exchange, Manchester

# Uncle Vanya

sel Effort's production... of the Royal Exchange... of the audience in... from the acting area... of the production is... as any I have seen... National's at Chiche... leafy bough is lowered... above, a Stanislavskian... the calls of the... dogs sleep, every... are certainly in the... of Professor Serebry... those. Two figures sit... candle-lit table, and... of a sitting-room... up around them in the... then, to the designs by... the lighting by... Williams, the sound by... won; but above all to the... for a set of finely... performances that could... have evoked the scene... sennery at all... asings over the household... cloud. Leo McKern's... furry, absurd Vanya not... old, he looks it, though... till on the right side of... Albert Finney's Astrov... his activity through... of overwork, wears his... mers in a lined, third... it lights up only when he... of his work of conserva...

... a beard, and Mr. Finney... Chekhov in person. His... of those interesting per... that achieve emotion... exclusion of emotion. The... of Albert Finney's Astrov... of his work for the forest... the uldbook enthusiasm; in... he is only unweaving it... to make her take some... of him, and when he later... of old weeds, colour... le emotion that they... He is particularly good... third act, when the Pro...

# Greek hymns

... "Hymns from the... ent matter. Now women's...

... voices were added—not every... Greek operatic soprano would... lead one to suppose the fact... but Greece does produce the... pure, vibrant timbre essen... of the choir for church music... "Recital of ecclesiastical... was more precise. What... rd was liturgical music... Greek Orthodox services... How strongly it descends... the forms of Byzantine... "probably" according to... programme note, deriving... from Hebrew and early... in liturgies" is for... to say... he first half, Pentecostal... were sung by male voices... de chanted by the choir's... rainer and conductor... Trautlides, four or five... providing that continuous... one which is sometimes... to non-Orthodox ears... bourdon surely ought to... chant free and give it... but it seems to do the... to force it towards... patterns unsuitable to... It is usually fatal to... one culture in terms of... the second part were... ent matter. Now women's...

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Lesley Collier (Bianca) and Wayne Eagling (Lucentio) in 'The Taming of the Shrew'

# Haydee and Cragun

The idea of a true dance partnership—permanent, mutually dependant and mutually enhancing, honed and polished over the years—is becoming rare in ballet today. Stars whirl round the world, forming ad hoc duets with other guest artists, but there is never enough time for the years of rehearsal and the deep understanding that will result in an artistic communion which can illuminate the dramatic and dynamic core of a ballet. The example of Markova and Dolin, of Danilova and Franklin, who worked together for a decade and more, and whose interpretations were marked by a singleness of purpose and ideals, seems almost lost to the hallet of the 1970s. (The Sibley/Dowell linking was the nearest that the Royal Ballet has come to this happy state in recent years.)

The example of Marcia Haydee and Richard Cragun is thus all the more exciting as a triumphant assertion of the theatrical magic of a permanent partnership. Both magnificent dancers, they appear totally aware of each other at every moment on stage. On the bedrock of almost intuitive partnering they can afford to elaborate their joint interpretation, play jokes, even seem to improvise, as we saw on Saturday night when they assumed the roles made for them in *Taming of the Shrew*. It was a golden evening. Though *Shrew* is no masterpiece, it can look very like one when Haydee and Cragun set about teasing and fighting together. Enzed from the opening scene, in which Miss Haydee emerges on to a balcony to dampen the ardour of Bianca's suitors, the beautiful submission to Petruchio and their final joyous reconciliation in a ballet. Enzed with Lesley Collier's Bianca (remandously good), or suddenly pathetic as she suffers the awful tricks in Petruchio's house, Miss Haydee never once loses sight of the fact that Katherine is a woman of feeling, bewildered by the trouble it involves her in, and happy at last to relax into matrimony. It is a dazzling performance in his witty resource, in his high spirits, and also in its sensitivity; and throughout, Miss Haydee's dancing has a bright, radiant ring to it.

No less thrilling is Richard Cragun's Petruchio. He possesses an extraordinary physical allure...

# The Entertainment Guide is on Page 29

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# Bach Choir

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# Jenufa

The performance of Janáček's *Jenufa* given by Scottish Opera at the Theatre Royal, Glasgow, on Saturday, was received by a full house with the total absorption, the almost palpable silence, that denotes a cathartic dramatic experience. First staged in 1973 at Cardiff by the Welsh National Opera, David Pountney's production was subsequently toured (with some changes of cast) by the WNO and now arrives in Glasgow with the four original principals, singers and the original conductor, first fruit of a lease-lead agreement between the two companies that is so far proving outstandingly successful.

Mr. Pountney has considerably tightened up his production, especially in the opening scene, which Janáček himself did not quite achieve, in this early opera (his third), the immediate dramatic tension characteristic of his later works for the theatre. The emotional stresses and strains within the Buryja family are now evident right from the beginning, while any necessary contrast is provided later in the act by the drunken celebrations of Steva and his companions. Maria Björnsdóttir's spare, elegant sets look marvellous in the Theatre Royal; she was originally criticised for failing to suggest the cramped, confining atmosphere of the Kostelnicka's house, but the claustrophobic feeling induced in *Jenufa* by the weeks of waiting for her baby's birth is made quite clear by her actions—and her music, while Miss Björnsdóttir's huge skylight is used with hair-raising effectiveness when it blows open at the end of the second act.

Individual characterizations have been refined and honed until they cut as sharply as the finest scalpel. The stormy love affair between Steva and Jenufa is now encompassed by the high spirits of the woman betrayed and abandoned, the mother deprived of her child, the girl's growing love for Laca and her feelings of affection and gratitude for the Kostelnicka. Her singing is so completely integrated into her dramatic conception of the role that the two aspects of the performance cannot be separated. Pauline Tinsley, in firm and lustrous voice, makes a very human figure of the Kostelnicka; eschewing melodrama, she carries entire conviction as a woman in whom pride is the dominant emotion until she is forced to look into her own soul.

Allen Cathcart's Laca has grown in depth and understanding; he can communicate great tenderness as well as strength. In striking contrast, Gregory Dempsey's attractively irrepressible Steva is equally well-drawn. Among the smaller roles, all neatly characterised and competently sung, Gillian Ramsden's jubilant young shepherd-boy Jeno, and Lauren Livingstone's pert, pretty Karolka are outstanding. To Richard Armstrong, who conducts the Scottish Philharmonic, must go a large share of credit for the shattering effect of the performance.

# Edith Piaf, je vous aime

Lihby Morris has put together a nostalgic evening of 35 of Edith Piaf's songs, mostly translated into English, though she has had the good sense to see that "Non, je ne regrette rien" could never be put into the right English words if a dozen Eet Laureates tried it for a decade. She has three singers with her, Maureen Scott, John McInerney and Tony Bateman, plus a pianist and an accordionist.

Much of the spirit of that simple, silly, astonishing woman, whom all right-minded people admired beyond the bounds of good sense, is conveyed through the succession of pretty, death-haunted romances in triple time. Though Miss Morris is the only...

# Katya Kabanova

Janáček's masterpiece is currently revived at the Coliseum. The staging by John Blatchley, with the sets of Stefanos Lazaridis and the exquisite lighting and projections of David Hersey, is one of the glories of contemporary operatic production, and is in good condition, apart from the handful of stage-management mishaps that habitually mar ENO first nights. Charles Mackerras is back in the pit, urging the orchestra to new mastery—to the fiery, thrilling sonorities, the vibrant timbres and colours is added a new lyrical sweetness in the love music. The cast plays as if Janáček were in his blood. On Thursday not much seemed wrong in the opera house—except for thin patches in the audience. Mystifying phenomenon, that an opera of such life-enhancing honesty, directness, and depth of feeling should each time need fresh en-

couraging on the public, with and full. To have one fine Katya is uncommon; to have two is wonderful.

As the *Kabanicha*, Elizabeth Connell adds to her collection another bold, broadly drawn portrayal, the voice ringing out with unstinting brilliance. The result is too obviously evil, too ferocious, neglectful in details of massive dignity, and aged prettily; but the emotional force is tremendous. Her mekups, and that of Dennis Wicks' virid Dikoy, had been thickly applied. Otherwise the cast is familiar—Kenneth Woolam sturdy, if still a little unromantic, as Boris, Robert Ferris ever surer in his depiction of the craven Tichon, the charming younger couple of Terry Jenkins and Barbara Walker. The way the water ripples and flows, under the action and throughout the evanescence, is not the least admirable feature in a moving and beautiful performance.

# Jorge Bolet

In an unusually discerning burst of enthusiasm, Harold C. Schonberg once described Jorge Bolet as "one of the great Liszt pianists of the century, with fingers of a Horowitz and the tone of a Lhevinne." Opportunities to hear this legendary Cuban-American pianist in England have been rare. Bolet surfaced briefly to give a tantalising performance of a single work at the Festival Hall during an international Piano Library jamboree two years ago—his only appearance here for many years. We have had otherwise to rely on records; and even these, from American RCA, have been difficult to find. So it was specially exhilarating on Thursday to confirm what one had always half suspected, but never had the chance to prove at first hand: that there is indeed not an ounce of exaggeration to Schonberg's praise.

Bolet is an enormous pianist: enormous in physical stature, in musical weight, in technical command. But neither is he any kind of sledgehammer artist: the weight is kept in reserve, powerfully contained. He is a pianist of the old, grand school, actually of the Curtis School, during the great Hofmann era. Could any other living musician, except perhaps Horowitz and more idiosyncratically, Cherkassky, have transported us into such vivid, explosive force to the early years of the century—to the piano rolls of Lhevinne and Godowsky, the acoustic records of Rakhmaninov? Bolet's recital of the sublime, and the keener living presence, which gathered momentum as it went. The point of highest excitement was Bolet's second half, devoted to Liszt's three *Études de concert*, whose performances of the purest magic, the long, sighing lines of "Un sospiro," a breath of heady, Swann, the small but devoted melancholy perfume. Before audience gave Bolet a standing ovation. Next time, which must last sonata (the E flat, no. 52), he soon, there will be more of us to cheer.

# Mahler's Ninth

Mahler's Ninth Symphony is in so many ways a final work. It is the last composition Mahler completed and it contains, in its strings sound with the sweet sorrow of parting, or with the clarity of the Alpine light which seems to be invoked in the final work which must be considered. There, the violins, in particular, were thin and tired, so that it was difficult to know whether Mr. First saw the music as passing away in regret or in resignation.

Of course, by this time the orchestra had been playing for close to an hour and a half, and one might have expected some fatigue, though in fact they had never shown quite the confidence, clarity or accomplishment needed for a work which must be considered. In the end, the orchestra was in a state of exhaustion, and the music seemed to triumph over inadequacies.

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OVERSEAS NEWS

Turkey cool to Clifford mission

By Metin Mumin ANKARA, Feb. 20.

U.S. PRESIDENT Jimmy Carter's personal emissary in the eastern Mediterranean, Mr. Clark Clifford, arrived here this evening for two days of talks with Turkish leaders on the Cyprus question, Turkish-U.S. defence relations and Turkey-Greek problems.

Mr. Clifford arrived in Ankara on Wednesday where he will complete the first round of his mission after talks with the leaders of the Turkish and Greek Cypriot Communities.

At the airport, where he was met by Turkish Foreign Minister Hasan Sabri Caglayangi, Mr. Clifford said he hoped his visit would "deepen and broaden and make even more significant the long and happy relationship between our two countries."

He would confer with Turkish leaders in detail "particularly with reference to defence agreements that are so important to the continued relationship between our two countries."

Turkish-U.S. relations have been ever since the Cyprus war of 1974. Washington imposed a ban on arms supplies to Turkey and was deprived of its uses of its bases on Turkish soil as a consequence.

A new defence co-operation agreement was signed between the two allies but is awaiting Congressional ratification which will certainly be influenced by Mr. Clifford's report on the situation.

Mr. Caglayangi, clearly referring to Cyprus, said he hoped Mr. Clifford's visit would "facilitate the solution of problems which surround Turkey."

He further hoped that the visit would terminate, what he bluntly called, the currently far from satisfactory relations between Turkey and the U.S. — a statement which wiped the smile from Mr. Clifford's face.

The Turkish Press has been uniformly cool or hostile in its treatment of the Clifford Mission, considering it an unnecessary and even harmful intervention. One editorialist likened the former U.S. Defense Secretary's visit to that of a bull in a china shop.

Dissidents no stumbling block to talks—Brzezinski

BY DAVID BELL WASHINGTON, Feb. 20.

THE SOVIET UNION is continuing private talks with the U.S. about arms control, trade and other matters despite its public criticism of President Carter for his open support of Soviet dissidents.

Mr. Zbigniew Brzezinski, Mr. Carter's National Security Affairs adviser, disclosed this today in an interview with the New York Times during which he insisted that there was nothing "inadvertent" about Mr. Carter's recent letter to Mr. Andrei Sakharov, a leader of the dissident movement. He said the implications of the letter had been carefully thought through and fully discussed before it was sent.

"Imagine," he said, "the President of the United States who on his inauguration day speaks of his dedication to human rights receiving a letter from a Nobel Peace Prize Winner residing, say, in Chile or North Korea. Would he ignore it?"

Accordingly he had been decided that the President would write a "very general letter" re-stating in very broad terms "the President's concern for human rights, not pointed at any particular nation."

The administration had realised that Mr. Sakharov might choose to release the letter and had not tried to stop him from doing so.

"The alternative was to make a public response which would have been far more pointed and provocative. Another possibility was not to respond at all which, if you consider the circumstances, was scarcely reasonable," Mr. Brzezinski said.

The whole question had been discussed at great length with Mr. Anatoly Dobrynin, the Soviet Ambassador, along with other issues such as arms control and trade. "On the fundamentals we are making and have been making an effort to get discussions going—to move on Salt and on SALT II and to widen the range of discussion. It has not surfaced yet, but I think it will produce dividends before too long."

Official Washington is deeply divided about the wisdom of Mr. Carter's support for Soviet dissidents. But it is abundantly clear, as it has been for some time, that Mr. Carter rarely does anything by accident and that, in this case, for better or worse, this is a very deliberate approach to the issue.

Pravda warns Carter on 'attempts at interfering'

MOSCOW, Feb. 20.

THE Soviet Union today mixed praise for President Carter's words on the needs for arms limitation with criticism of his deeds in defence of human rights.

An authoritative commentary in the Communist Party newspaper Pravda appeared to reflect Soviet concern that the dispute over human rights would affect the Strategic Arms Limitation Talks scheduled to resume with U.S. Secretary of State Cyrus R. Vance's visit to Moscow late next month.

Carter and Vance have made many statements "on the need to take urgent measures in the area of strategic arms limitation," Pravda said.

"But words are not enough," Pravda said. "Statesmen are not judged by words but by deeds, in the first place, and the deeds of the same new administration of the U.S. do not square with the positive development of Soviet-U.S. relations."

Pravda cited "attempts at interfering in our internal affairs, in the affairs of some other socialist countries on the plea of 'defence of human rights'." Of course, those attempts were rejected, it said.

The commentary in Pravda's weekly international review came three days after Soviet Ambassador to the U.S. Anatoly F. Dobrynin warned that the administration's support of human rights activists in the Soviet Union was "not consistent with the positive development of relations."

(UPI) Editorial Comment, Page 10

Rhodesians admit Botswana raid

BY OUR OWN CORRESPONDENT

IN A communiqué announcing the death of a white police inspector and the wounding of a field reservist during what military headquarters (this week-end) described as a "hot pursuit" operation, the Rhodesian Government has for the first time disclosed that its forces have crossed into Botswana.

The communiqué also announced the deaths in separate incidents of one white and two African police constables, and 13 guerrillas, while the border post of Vila Salazar has again come under "unprovoked" rocket, mortar and small arms fire from Mozambique.

According to the communiqué, a police team crossed the border "acting on information received" regarding a group of five guerrillas allegedly operating from Botswana.

The group, it was claimed, had been responsible "for a recent series of abductions and brutalities to tribesmen in the Mphahlela tribal trust land" which adjoins Botswana. "The terrorist group was known to be based with tribesmen in Chief Menguwe's area of Matengwe in Botswana."

The communiqué claims that at the kraal, two miles from the border, five guerrillas opened fire on the police, killing Detective Inspector Michael Harlow, 37, who was wounding a police reservist and harbouring "terrorists" who are

making forays into Rhodesia, while Botswana has counter-charged that Rhodesian forces have regularly infringed their territory.

An increasing number of young blacks are crossing into Botswana, either voluntarily or, according to the Rhodesian government, abducted by guerrillas. From there they are sent to Zambia for training under the Zimbabwe African Peoples Union led by Mr. Joshua Nkomo.

At least 1,000 have crossed in the past few weeks, but the Rhodesian Prime Minister, Ian Smith said tonight that he would ask Parliament next week to approve major relaxations in the country's race-discrimination laws, Reuter reports from Salisbury. Mr. Smith, who was speaking in a television interview, said legislation to be introduced in Parliament would be designed to end racial discrimination in certain areas. But he refused to go into details, saying the legislation was confidential until it reached Parliament.

The Government, he said, had considered the removal of all racial discrimination, but said this posed serious problems, particularly in the protection of black areas.

Government this week-end denied a report that nearly 1,000 schoolchildren had arrived in Rhodesia in the past few days. The authorities here claim that 47 children were abducted from the Gwanada area on Friday, and about 12 more in the preceding days.

Quantis Peel reports from Johannesburg: The death of a Rhodesian police officer within Botswana at the weekend has

given strong support to the Botswana Government's allegation of Rhodesian aggression currently being investigated by a UN mission to the country.

A Botswana Government spokesman said tonight that it was the third time on which the Rhodesian forces had entered the same area. Previously they had arrived by helicopter and had interrogated local people.

The UN mission led by Mr. Abdulrahman Farah, the Assistant Secretary General from Somalia, was actually in the border area when the incident took place on Friday night.

According to a statement issued by the office the president in Gaborone, the Rhodesian was shot dead by a patrol of the paramilitary police mobile unit of some 12 kilometers north of Francistown.

The incident is the third within a week at the Rhodesia-Botswana border, after a period of relative peace which followed a UN resolution condemning Rhodesian aggression against Botswana.

Unconfirmed estimates put the number of refugees passing through Botswana at several hundred a week, and charter flights are organised to take them to national camps in Zambia. So far no journalists have been allowed to visit the refugee camp.

Voters in Spain move to centre

By Reginald Dale, European Editor

MADRID, Feb. 20.

SPANISH public opinion has reacted against the violence and uncertainty of recent weeks by moving away from the extreme Right and Left towards the centre, according to private soundings carried out for the Government.

The latest secret poll, conducted at the end of last month, shows that the recently-founded Democratic Centre group would win about one-third of the total vote if elections were held now. Support for the right-wing Popular Alliance and the Communist Party has markedly declined, to 14 per cent, and 7.8 per cent, of the electorate respectively.

The poll is encouraging for politicians who want to form a new Centrist-Christian Democratic coalition after the elections, due to be held in May or June.

Suarez plans economic package

BY ROGER MATTHEWS

MADRID, Feb. 20.

MINISTERS in Spain were this week-end putting the final touches to a package of economic measures scheduled to be announced on Tuesday.

Despite a ten-hour Cabinet meeting on Friday, disagreement remained on several important issues, including possible changes to the parity of the peseta.

While the Government has finally accepted the need for limited action to stem the continuing deterioration in the economy, it is deeply concerned that its measures should not add to social tensions that might threaten its political liberalism programme.

However, the Government can be expected to announce further aid for exporting industries, a sharp increase in official credit, changes to the law on strikes, modifications to legislation on security of employment, and greater flexibility in interest rates.

With last year's overall balance of payments deficit understood to have been over \$4.3bn, an annual rate of nearly 20 per cent, some industrialists have been arguing that no measures to stimulate exports will be effective without a devaluation of at least 10 per cent. Part of the argument within the Government has been on whether the pricing problem of Spanish

exports would be better handled by allowing the peseta to float, down gradually, thereby avoiding a sudden fresh impetus to domestic inflation.

The Government has set targets of a 6.5 per cent increase in exports this year, and 3.5 per cent rise in the gross industrial product.

Prime Minister Adolfo Suarez is also working towards the completion of the electoral law which will govern the general elections due to be held before the end of June. Following negotiations with opposition parties, the framework of the law is believed to be virtually finished, and an announcement could be made later this week.

PCI caught off guard by riots

BY PAUL BETTS

ROME, Feb. 20.

WHILE THE present wave of violence continued in Italy this week-end with the killing of a policeman and further student clashes and demonstrations, the Italian Communist Party has openly admitted that it had seriously misread the gravity and complexity of the current Italian student crisis.

In an official statement released here yesterday—which in effect represents a post-mortem on last Thursday's riot at Rome University following a speech by the Communist trade union leader Signor Luciano Lama—the Communist Party disavows its own disorganised party rally for failure to grasp the seriousness of the student unrest and for not averting last week's clashes at the university here.

Yesterday some 50,000 students again took to the streets and piazzas of Rome. A heavy police cordon prevented any communication from reaching the Communist Party headquarters at Botteghe Oscure but a Communist Party branch office was attacked by extremists in a suburb of Rome. In Milan several violent clashes between student groups erupted during student demonstrations in the city yesterday. Many injuries were reported.

In another incident a policeman was shot dead in a Milan suburb late last night by someone alleged to belong to the so-called left-wing extremist group "Red Brigades."

On Thursday, Left-wing extra-parliamentary groups are believed to have started the riots which spread to a number of towns to Roma University and in which about 50 people were injured.

Although the Communists are blaming the ruling Christian Democrats for the deterioration of the student situation, they are seen here as being clearly embarrassed—as during the student clashes of 1968—by their lack of control over the great mass of the Left-wing student population.

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Brandt links CIA is denied

A SPOKESMAN for the German Social Democratic Party has described as "a standard insinuation" a charge that Chancellor Willy Brandt secretly financial dealings with the American Central Intelligence Agency, UPI reports from Bonn.

The spokesman, who said the party was making a demand on Brandt's behalf, was commenting on a report in the West German Post based on a book "The CIA and the Cult of Intelligence" which is reported to claim in addition to Herr Brandt, Hussein of Jordan, and Prince Fahd of Saudi Arabia, King Mohammed of Libya, and President Mobutu of Zaire, and President Ham of Guyana all had dealings with the CIA.

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Syrian PLO camps closed

PALESTINIAN guerrillas Yasser Arafat yesterday ordered some Palestinian military camps in Syria to be closed down by the authorities, according to a Qatari news agency report.

Qatari news agency report from Kuwait, UPI reports from Riyadh, Saudi Arabia, that Arafat said that a military settlement would be possible unless the Palestinians regained "all their rights."

Dutch wage talks

Some prospects of movement appeared in the Dutch wage dispute deadlock over the weekend after the unions agreed to re-open talks at major companies. Michael reports from Amsterdam: unions have decided to re-strike at the companies in return for a 10 per cent pay rise. Fokker Aircraft, while Shell postponed its planned court action against the unions.

The Presidents of Egypt, Syria and Sudan will meet in Khartoum, Sudan, on February 27 for a summit expected to last two days, according to the Sudanese news agency, Reuters reports from Khartoum. Last week, Vice-President Rashad El-Tahir said: "Anwar Sadat of Egypt, Hosni Mubarak of Syria and Nimeiri of Sudan would be participating for the first time in the armed struggle" summit.

The pro-Moscow Sri Lanka Communist Party yesterday said it would support the Sri Lanka People's Liberation Front, resigned as Housing Minister, as the final dissent of the three-party Front which Mrs. Bandula Kumari Bandula led in 1970. The other 14 members of the ruling party were ejected by her in 1973.

Communists quit

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PLANT & MACHINERY SALES

Table with 3 columns: Description, Price, Telephone. Lists various industrial equipment like furnaces, wire drawing plants, rolling mills, etc.

WANTED

8FT. x 200 TON Clinknet or Hammer Press Brake. Must be A1 condition. MODERN USED ROLLING MILLS, wire rod and tube drawing plant—roll forming machines—sifting—forming and cut-to-length lines—cold saws—presses—

CONTRACTS AND TENDERS

Democratic and Popular Republic of Algeria

MINISTRY FOR INDUSTRY AND ENERGY

SOCIETE NATIONALE DE L'ELECTRICITE ET DU GAZ. DIRECTION DU TRANSPORT DU GAZ

NOTICE OF EXTENSION OF TIME

The tenders concerned by the international tender for the supply on site, assembling and starting up of machine-tools and production equipment for the realisation of the meter complex of El-Eulma are informed that the date limit for sending tenders has been postponed to March 31, 1977.

Kingdom of Thailand

Notice to Civil Engineering Contractors

The Government of the Kingdom of Thailand has applied to the World Bank for a loan to help finance construction of four roads totaling about 900 km, and expected to cost over US\$130 million equivalent. Construction will include 600 km of roads, 100 km of bridges, 100 km of culverts and 100 km of drainage. The work will be carried out in three phases in 1977 and 1978, and will include the construction of 100 km of roadwork, 100 km of bridges, 100 km of culverts and 100 km of drainage.

Saudi Arabian Contractor

Invites enquiries from U.K. firms interested in carrying out joint work in the Kingdom of Saudi Arabia in the fields of precast concrete, general building and civil engineering.

Contact: P.O. Box 1996, Riyadh, Saudi Arabia.

Arabic text at the bottom right of the page, likely an advertisement or notice.



WORLD TRADE NEWS

U.S. Treasury may appeal in TV case

WASHINGTON, Feb. 20. U.S. TREASURY will likely appeal in the case of television exports much in the way that VAT (a much more complex tax) is refunded to British exporters. The use of the refund in this way is widespread and the Zenith case is therefore regarded as an important test case with far-reaching implications. In January last year the U.S. Treasury ruled that the refunding of "indirect" taxes—as distinct from direct income or profits taxes—does not infringe any laws in the U.S. Zenith argued that in fact the Japanese action broke an 1897 counter-vailing duty law which was later incorporated into a 1930 Statute. Mr. Bergsten said that he was well aware that the case could have a serious effect on U.S. trade relations with a number of countries; and the Treasury is most worried by the fact that, if the court finds in Zenith's favour, the ruling may raise so many doubts in the minds of importers about what duty they will have to pay that they will decide to stop importing until the air has cleared.

Soviet oil deal with India near

NEW DELHI, Feb. 20. AN INDIAN trade delegation has visited Moscow for final negotiations on import of 1m. tonnes of Russian crude oil this year in exchange for steel and pig iron, the harter agreement for which was agreed in principle a couple of months ago. The delay in finalisation of the deal is due to Russia's indecision on the price it will charge for its crude because of the uncertainty over world prices caused by the ambivalent OPEC decision. The Russian decision has been taken—though not yet announced—and the Indian team will work out a timetable for both imports of crude and export of steel and pig iron. Russia has agreed to sell 5.5m. tonnes of crude to India over the next four years, beginning with 1m. tonnes this year. In addition, substantial exports of kerosene and diesel are to be made. It has also been announced that India is to help Vietnam in offshore exploration and production of crude.

DOING BUSINESS IN THE MIDDLE EAST

The post-Nasser spending spree continues

BY MICHAEL TINGAY IN CAIRO

PICKING UP the English language publications in an average week the businessman visiting Cairo would be deluged with facts and figures on matters economic. Only the recent riots, dominating the news, succeeded in pushing aside the usual harvege of items on investment approvals, expected loans, new funds and expected improvements in the budget deficit. But figures in Egypt are not like those elsewhere. Almost daily a bewildering array of numbers intended to describe economic developments is generated in the offices of Ministers and bureaucrats to be redigested by a totally uncritical local Press and published to reassure one that to-day's gloom will be transformed into a rosy future. No place in the world gives so jarring and accurate a first impression of the difficulties to be faced by the business visitor as Cairo. The numbing chaos of traffic jams, unworking phones, unkept appointments, lack of hotel rooms or apartments and the morass of bureaucracy are the lingua franca of business. Two types of foreign operator try to function in Egypt: those engaged in trade and those looking for investment opportunities. Despite its uncontrolled foreign market riding higher than ever in a post-Nasserite spending spree. Even last month's riots may only cause a temporary change in the trend to heavy consumption. A three-hour television debate by the Economic Ministers after the riots barely got beyond the question of private purchase of goods with foreign exchange held abroad. Egypt plans to import more than £22bn. worth of basic goods next year and may continue as a net importer of services. Someone selling anything from children's tricycles to pre-

fabricated factories has a captive market. But the obstacles are serious. A locally appointed agent—and local expertise is already overstretched with impossible-to-fulfil commitments—should handle the bustling through the public organisations, the protective tariffs, the import licences and customs duties. But time and money spent here is wasted unless a letter of credit enables the local party to come up with the hard currency to fulfil his contract. Individuals can import a certain amount with currency held abroad, a British seller can see if the Export Credit Control Department will fill another gap. But with Egypt's Central Bank juggling with piteously limited amounts of hard currency it is not surprising that guarantees of payment are made sparingly. A year long dispute with the international airlines which Egypt refused to buy back was settled recently—but only after a compromise on the rate of exchange. The newcomer can try to find other financial guarantees—it would be foolhardy to accept the buyer's belief that the can set the foreign exchange but he can also use the supplier credit system. Companies specialising in buyer and supplier credits like Tenant Guaranty are fluent in the pitfalls of Egyptian foreign exchange dealings. A Tenant man pointed out "it is more expensive but the company does get the deal through quickly and the seller does get his money." Foreign exchange is the fulcrum of difficulties in Egypt. There is not enough of it and the price varies with the transaction. Recent moves at the Monetary Fund to simplify the exchange rate system to a dual rate are in limbo as is the total relationship between Egypt and the IMF after the slap in the face of economic reforms provided by last month's riots. For the moment the official rate is 38 piasters to one U.S. dollar, the parallel or incentive rate is 69 piasters and the black market rate is 73 piasters. More and more trading is being done at the parallel rate except for specific vital commodities. The businessman must up to the present run his operation in Cairo at the official rate, which works out very expensively, but can manage his personal affairs at the parallel rate. A new foreign exchange law, number 97 for 1976, has added slightly to the general confusion. In the absence of an official translation, businessmen scared themselves with rumours about its effect. The new law is intended to bring hitherto illegal foreign currency transactions into the official embrace so that they can be monitored. Encouraging Egyptians to move from the black market, Law 97, which was due to be pushed quickly through Parliament, allows possession of foreign currency by individuals thus confirming an amnesty introduced by the last economic team in the Cabinet. Confusion is compounded, however, since the Articles of the law make no mention of the parallel exchange rate while regulations, which remain subject to administrative amendment, are filled with references to this market. Until now the greatest anomaly for the investor has been the Statute under Law 43 for foreign investment under which foreign capital for a joint venture must be brought in at the official exchange rate (per cent a devaluation of the Egyptian pound does not affect the foreigner's share with the Egyptian partner) but would be taken out at the disadvantageous rate. Following a number of complaints, the Cabinet is about to introduce amendments to Law 43 to compensate. The rate themselves, however, will still be subject to administrative movement and some investors will still feel deprived of their chance to make business projections based on market realities. The Ministry of Economy is now sounding out opinion on proposed Law 43 amendments. These are: Changing Article 2 to make invested capital exchangeable at the parallel rate incoming or outgoing, business land sales would remain at the official rate, making tax holidays firm at eight years for projects and distributed dividends; eliminating possible double taxation in Article 18, extending the Article 47 tax holiday for Free Zone projects to distributed dividends; cut out the need for a Presidential decree to give customs exemptions for imported capital assets, removing limitations on the value of invested capital that can be repatriated under article 21, allowing dealings in free currencies and securities with sale proceeds directly remittable abroad (in effect freeing the capital market). Recent moves to put the Egyptian pound on a limited commercial market had already been dropped after talks between the IMF and the Egyptians even before moves to cut subsidies had been shelved. Many businessmen would have welcomed the commercial money market but the rise in the cost of living and of production might have triggered domestic disturbances. The trader or investor who has delved this far into the inner mysteries of business in Egypt will by this stage have discovered incidentally the paradoxical maxim: Don't do it yourself but don't expect anyone else to do it for you. The survivor in Egypt is the one who doesn't try to get his own hotel room, does not try to make his own phone calls or telexes. He employs a specialist for each job—a driver to surmount daily traffic hazards, a lawyer to handle regulations, a messenger for in-town communications, a customs fixer for the airport, discreet cousins for bribes, and preferably a wife to fight the voracious flat and estate agents. To survive in Egypt one must become a connoisseur of inefficiency. It is probably a myth that the murky bureaucracy is seething with Nasserites working secretly against Mr. Sadat's *Infitah* policy. There is nothing more sinister than a malaise which comes from the view that it is naive to swim against the tide of inefficiency and corruption. The employee rightly says "they pretend to pay us so we pretend to work." The visitor with grand ideas of fixing everything by bribes will probably be disappointed. Accepting bribes is like taking an Egyptian mistress—everybody does it but they must be seen to be pretending; not to. Bribes work best through a middle man but beware of paying for services that cannot be rendered. There is nothing unchanging about the enthusiasm in Egypt's oldest area of business, the Free Zones. Set up with little forethought supposedly to free the foreign investor from the tangles of red tape, the Free Zones should theoretically raise standard of production, attract technology and bring dollars into Egypt. But their function is so fuzzy that one of the two Free Zone banks, the Bank of Nova Scotia, suspended operations for one month last summer and reopened as a foreign exchange onshore branch presumably making his own phone calls or telexes. He employs a specialist for each job—a driver to surmount daily traffic hazards, a

arter surpluses moves

OUR OWN CORRESPONDENT WASHINGTON, Feb. 20. ARTER Administration is using other industrialised countries with large current surpluses to move more "equilibrium," a senior U.S. Official said over the weekend. Mr. Bergsten, the Assistant Secretary-Designate for international affairs, said that the States was not seeking to interfere in the internal affairs of other countries, but industrialised nations clearly have a collective responsibility for the management of the economy. The current climate, sizeable account surpluses were "liberating" and it was

Swiss in Turkish dam project

ZURICH, Feb. 20. SWITZERLAND'S three leading commercial banks—Swiss Bank Corporation, Swiss Credit Bank and Union Bank of Switzerland—have offered to help finance large-scale Turkish orders with Swiss manufacturers in connection with installations for the second Euphrates dam. The Swiss Government would extend export risk guarantee facilities for the orders, put at an excess of Sw.Fr.450m. The manufacturers concerned would include the Sulzer Brothers group, its affiliate Escher Wyss and the Brown Boveri concern. A Turkish decision is expected in a few weeks' time, it was stated in connection with a visit to Berne of the Turkish Foreign Minister.

Austrian deficit up

VIENNA, Feb. 20. AUSTRIA'S visible trade deficit last year jumped by 75 per cent. to an all-time peak of Sch.53.2bn. (£1.58bn.) and gold and foreign exchange reserves dropped by Sch.21.5bn. compared to 1975. Analysing these figures and the gloomy prospects for the current year, Dr. Philip Rieger, the central bank director in charge of foreign exchange, called for measures to stem the further rise in imports.

Finance for Yugoslavia

BEGRAD, Feb. 20. AN AGREEMENT has been signed here between a consortium of nine banks from Northern America, Europe and Iraq led by the Bank of Montreal of London, and the Yugoslav Investment Bank of Belgrade on \$33.2m financial credit

Contracts

P & O is to join American and Saudi Arabian interests in the formation of a new inland transport company, the National Transport Company of Saudi Arabia, to provide road transport services through the Arabian peninsula. P & O will have a 30 per cent. stake in the Jordan-based business, which will specialise in container, trailer and heavy baggage work. A chemical plant producing raw materials for the dyestuff industry is to be built at Bronsbuettel, North Germany, as a joint venture of the Swiss chemical concern Ciba-Geigy and the German company Bayer. To be linked to new OPEC price revisions. Dow Chemical Europe has reached an interim agreement under which it is to continue studies for the construction of a

has recently secured a £2m, \$500m. petrochemical complex at Jubail, Saudi Arabia. Sweden and another £31m order for refrigerators for Portugal. Henry Sykes has announced that their subsidiary company Khashabeh Sykes in the United Arab Emirates has been awarded a contract worth over £1m. Khashabeh Sykes will act as sub-contractors to the Orient Contracting Company, who are the main contractors, and the work comprises dewatering 35 kms of pipeline and three pumping stations to serve a new sewage treatment works to be constructed outside Abu Dhabi studies for the construction of a

World Economic Indicators

Table with columns: RETAIL PRICE INDICES, Change on year earlier, Index base year, and rows for Jan. 77, Dec. 76, Nov. 76, Oct. 76, Sep. 76, Aug. 76, Jul. 76, Jun. 76, May 76, Apr. 76, Mar. 76, Feb. 76, Jan. 76.

Scotboard - 10 years old - but big for its age

And a pretty precocious ten-year old, at that. After all, from the time we opened our first production line in 1967 - a caulless system that's since become standard for the industry - we've been setting the pace for innovation in chipboard manufacture.

In the early 70's, we introduced integral tongued and grooved flooring board to the market. And, in 1974, we became the first manufacturer in the U.K. to produce a chipboard that met the stringent tests for the British Standard Flooring Grade.

With Scotseal, we have become the only producer in Europe of this treated board, capable of lying about in any weather without falling apart.

And, most recently, we've opened a new production line for special fibre surfaced board tailored for the furniture industry.

All along the way, these ten years, we've been developing new ways to improve the product and conserve raw materials for future generations. We believe that's both good sense - and good business.

So, if as Wordsworth said, the child is father to the man, we feel downright optimistic as we start our second decade.



Scotboard Innovators in Chipboard

Irvine Industrial Estate, Irvine, Ayrshire KA12 8NA SALES OFFICE: Direct Lines Tel: Irvine (0294) 72321-4

A member of the BPP Industries Group



# Building and Civil Engineering

## £10m. Mears award

A CONTRACT valued at over £10m. has been awarded to Mears Construction by the Property Services Agency acting as agent for the Ministry of Defence.

The three-year contract, which will be concerned with the modernisation of the Army's Central Ammunition Depot at Kinross, Warricksbire, will involve up to 300 workers on extensive demolitions and earthworks, new buildings, road and rail communications and ancillary services.

Over 80,000 cubic metres of concrete and 5,000 tons of reinforcement will be used.

## £1½m. jobs awarded to Cubitts

TWO WELSH contracts involving new homes and a factory reconstruction and jointly worth £1.5m. have been awarded to Holland, Hannen and Cubitts Construction (London).

Under a contract worth about £900,000, Cubitts will build 88 houses in the first phase of a major development at Barracks Field, Newport, Gwent. This project is financed by the National Housing Corporation through the Spiral Housing Society. Architects are the National Building Agency and completion is

## Fairclough work in East Anglia

FIVE contracts have been won in East Anglia by Fairclough Building. The grand total is £14m., with £473,000 earmarked for an infants school and community centre in Basildon for Essex County Council.

Six shops, 27 flats and a Methodist church are to be constructed for Basildon Development Corporation, at a cost of £333,000.

Erben's engineering division at Hadleigh is having a £200,000 extension to existing workshops. Fairclough has also been called in by the Home Office to carry out the rebuilding of the southwest wall at Wandsworth Prison at a cost of £130,000.

## Shops and flats in Piccadilly

TROLLOPE AND COLLS is to undertake a shops and flats development on the Monica site at London's Piccadilly Circus.

The work is being carried out for Land Securities Investment Trust and the overall scheme has been designed by Sir John Burnet Tait and Partners.

Demolition of the existing shops and offices will be carried out by Goodman Price.

During the 78-week contract, Trollope and Colls will erect a split-level reinforced concrete complex on piled foundations consisting of basement, ground and first floor at the frontage of the development with the first, second and third floor sections rising at the rear.

## £180,000 are to be supplied for 12-storey Hyatt Hotel in Surabaja and four passenger lifts and two service lifts are also to be provided for the El Salam Hotel, Heliopolis, Cairo. The order for the latter is worth over £100,000.

## New homes in Golden Valley

TAYLOR WOODROW is to build 160 homes on a 10½-acre site known as Golden Valley at Eaststone, Milton Keynes.

Phase development will begin in the spring of detached, semi-detached and terraced dwellings, all with garages and in the price range £100,000-£14,950.

There is to be substantial landscaping and planting, including a local park. Design and implementation of these facilities will be undertaken by the Development Corporation.

## Factories in Wales

TWO ADVANCE factories, each of 10,000 square feet, have been ordered by the Welsh Development Agency.

One, costing £110,000, is to be built at Noble Square, Brynmawr, by E. Turner and Sons, of Cardiff, and the other, costing £100,000, will be erected on the Clyr Hall Industrial Estate, Caernarvon, by Watkin Jones and Son, of Bangor.

## £6.7m. jobs by Laing

ACCOUNTING for most of the value in recent awards won by Laing to the tune of £6.7m. are two large housing jobs, one for £2.8m. in Birmingham and the other, put at £2.8m., in Enfield.

The first covers 277 houses, 36 flats and 28 bungalows under the new Hawkesley Areas A and E scheme which will ultimately be extended to something over the 2,000 homes mark. Most of the buildings will be of two storeys with bricks and tile cladding on a timber frame to the Rileyform method developed by London consultants James Riley and Associates, and erected by Laing under licence.

One of the very great advantages of the method is that it has helped Laing to agree to complete the whole job in only 20 months end up to 30 per cent. faster building is claimed than by the traditional cavity wall method.

The Enfield contract covers 215 new dwellings which should be completed in May 1979. Eleven blocks will comprise 154 maisonettes, 25 houses and 36 flats.

Two contracts make up the remainder—£1.3m.—and are for fitting-out premises in the Roade town centre redevelopment. Pioneer Co-operative Society is spending just under £1m. and the Woolworth organisation £354,000.

## A problem in Athens

PROBLEMS of liquid waste collection and disposal in metropolitan Athens are to be studied and reported on by consulting engineers J. D. and D. M. Watson following the signing of an agreement signed with the Greek Minister of Public Works last week.

The study will cover some 5,400 square kilometres and include the City of Athens, the Attic Peninsula, the Saronic and Egean gulfs and the islands of Aegina and Salamina.

About three-quarters of metropolitan Athens is connected to an inadequate sewerage system; sewage is mostly discharged into the sea untreated and close to the entrance of the harbour at Piraeus.

## Guide to software

CONSULTING architects Hutton and Rostron are setting up an information service dealing with software for the construction industry. This will complement their International Directory of Computer Programs for the Building Industry, which is being revised for publication in 1977.

The Directory is thought to be the only world-wide source of reference for computer services to the construction industry, and covers all topics likely to be of interest to the architect, engineer or planner, from design of offshore structures, as well as subjects more closely related to the building industry, such as structural analysis, heating and ventilation, and design of electrical services.

Information is collected by questionnaire, and abstracts are prepared and published as a free service. Hutton and Rostron will also prepare two-page descriptions of programs or services, to be included in a separate section of the book.

The directory will be published this spring by Hutton and Rostron, Nealey House, Gosnall, Snrrey, GU5 9QA.

## Leyland in £5m. plan

LEYLAND SPECIAL Products 18 has announced a £5m. modernisation and re-equipment programme for Aveling and Porter of Gainsborough, Lincs., the ever single investment plan of a group member factory.

The plant—taken over by Leyland Special Products 18 in 1975—produces crawler tractors and tractor shovels for the cultural and construction industries. Over 800 people work at the site.

Investment programmes—spread over the next two years—cover mainly factory re-erecting and modernisation, as well as new or replacement machinery.

The first of some 1,800 tractor factory-made buildings will be erected in March, construction of a "pig camp" to house the main tractors and Terrapin's own national Group companies will be started. The project is to be completed by the end of this year.

## £3.6m. oil workers camp

THE TERRAPIN International Group has been awarded a £3.6m. contract to build phase I of a second construction camp at Tofts Voe, Shetland, to accommodate 1,200 staff and workers building the oil terminal and tank farms on nearby Suibom Voe.

Miller Construction (Northern) has been appointed as main contractor and Terrapin International Group companies will undertake the major part of the camp building and internal services.

## Construction survey

FINANCIAL performance of the construction industry is better than current reports indicate.

This is one of the rather surprising findings of the first of a series of surveys of the industry carried out by Jordan Dataquest.

Five sectors of the industry covering companies with over £1m. sales, companies with under £1m. sales, building materials, builders' merchants, and plant hire companies are being covered.

The first two (dealing with sales) were published last week. Each covers about 400 firms and Jordan Dataquest says that among the larger companies only 41 were losing money according to the latest filed accounts. About 18 per cent. of the smaller companies were losing money.

Data given in the first two surveys includes sales, exports, profits before tax, number of employees, wage bills, net assets, current assets, liabilities, overdrafts and details are given on 55 of a series of surveys of the industry carried out by Jordan Dataquest.

Financial information from the surveys is mainly based on figures for the years 1975 and 1976 from company annual reports in London and Edinburgh. Anyone intending to do an important decision on findings of the surveys, do well to get the figures dated. Jordan Dataquest says this.

The surveys are £28 each, two if purchased together, £46 and they can be ordered from Jordan Dataquest, 27, Brunel Road, London, N1. (01-253 3658)

## Mobile office units

PORTABLE "instant" office units have been designed by Youngman System Building.

The units are available in 10 sizes and have wood-grain wall paneling, vinyl floor covering, sliding aluminium framed windows, decorated ceilings, fluorescent lighting and concealed 13 amp power points.

Options include partitioning, and a wide choice of fixtures and fittings to meet specific customer requirements.

Externally, the 60mm glass fibre insulated walls have a textured protective coating and the roof is lined with asbestos-backed vinyl sheet to provide a weather resistant maintenance-free structure.

Each panel is constructed from a heavy duty, vandal-proof 101.6 mm thick aluminium alloy sandwiched between layers of 0.7 mm thick perforated vanished sheet and framed in mm cold rolled steel.

Butterley's new brick

A MULTI-COLOURED facing brick made from colliery shale and called 'The Butterley Jubilee Mixture' has been put on the market by Butterley Building Materials of Ripley, Derby.

The brick offers a blend of colours which were originally obtained by the traditional coal firing clays, but Butterley has now found it is able to reproduce the traditional colours from orange reds through the browns to the deep purples with modern brickmaking plant.

Butterley has a weekly output of over 8m. facing bricks of different types.

## Absorbing the noise

INDUSTRIAL ACOUSTICS company of Staines has a sound absorption system based on modular panels. Available in two forms, the panels permit Lyon Road, Harrow, Middlesex, effective treatment for anything 01-427 9001.

## IN BRIEF

- A £140,000 order for specialised mining equipment has been placed with Victor Products (Wallsend) by Compagnie des Phosphates et du Chemin de Fer de Gafsa, Tunisia.
- A £35,000 order for metal channels and fittings for use in the Boutique Hall of the Lewisham (London, S.E.13) Riverside Centre, has been secured by GTE Unistrut, of Bedford.
- W. A. Gale, a subsidiary of Norwest Holst, will build 22 houses and 16 flats in Liverpool and 34 houses in Bootle. The total value of the contract is approximately £1m.
- A.B.M. Chemicals, a subsidiary of Dalgety, is currently investing around £300,000 in new plant at Aycliffe and Gloucester.
- Benfield and Loxley have awarded the £1m. building contract for the erection of a de Gafsa, Tunisia.
- A £35,000 order for metal channels and fittings for use in the Boutique Hall of the Lewisham (London, S.E.13) Riverside Centre, has been secured by GTE Unistrut, of Bedford.
- W. A. Gale, a subsidiary of Norwest Holst, will build 22 houses and 16 flats in Liverpool and 34 houses in Bootle. The total value of the contract is approximately £1m.
- A.B.M. Chemicals, a subsidiary of Dalgety, is currently investing around £300,000 in new plant at Aycliffe and Gloucester.

# The Wales and West Housing Association is building another 600 homes with electric storage heating. For all the right reasons.

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"How cosy it is! The heat goes all through my home!" Mrs. A. Gardiner, Cardiff



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"Flexible, reliable... lower capital costs!" Mr. D. Powell, Chief Executive, Wales & West Housing Assn., Cardiff



Here are just three of the satisfied tenants who enjoy electric storage heating in homes developed by the Wales and West Housing Association.

This association has already installed electric storage heating in over 1,300 homes, and another 600 more are scheduled for 1976/77.

"The more experience I have of heating systems, the more firmly convinced I am that electric heating is the only way," says Mr. D. Powell, the association's chief executive.

"Used properly and located sensibly, electric storage heating is clean, comfortable, and allows tenants full control over their environment. Capital costs are lower, and maintenance is no problem. And in all-

electric homes the tenant pays only one standing charge.

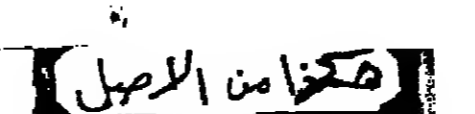
"All things considered, electric heating must be the system of the future."

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It's good sense to build with electric heating.

## BUILDELECTRIC

The Electricity Council, England and Wales









HOME NEWS

Unemployment could reach 1.75m. by year-end

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

THE GLOOMY outlook for unemployment is likely to be underlined again tomorrow with the publication of the jobless figures for mid-February. Mr. Albert Booth, the Employment Secretary, has already said that there might be a seasonal rise in the forthcoming figures. He has pointed out that there is a rising trend in some areas which is "very worrying. Whether things will get worse in the broad sense remains to be seen."

'Import bill may be too high'

BY SAMUEL BRITTON

AN OFFICIAL inquiry is being made by Government statisticians into the reliability of the trade figures. Independent economists have suggested that the import bill has been substantially overstated. Government experts are not yet ready to accept that any errors have been predominantly in one direction; but they readily concede that it becomes more difficult to record trade flows accurately during periods of rapidly changing currency values. The under-recording of exports—announced in June 1966—was an important factor in the delayed recovery of sterling after the 1967 devaluation. The under-statement then amounted to £800m. Any overstatement of imports on this occasion could be of a similar magnitude, although precise figures are still very much a matter of guesswork. One likely source of error arises from the fact that imports invoiced in foreign currencies are converted into sterling at prevailing exchange rates, while importers themselves might have bought their currency forward at more favourable rates. There is some sample evidence that there is more resort to foreign currency invoicing and to forward contracts on the import than on the export side. But officials are reluctant to draw conclusions until they have completed their own investigations. Any overstatement of imports would be automatically balanced by a higher capital inflow in the balance of payments accounts. The main importance of the trade figures is their psychological effect in the foreign exchange and gilt-edged markets and their use as a basis for official forecasts. *Lambard, Page 2*

'Inflation fears could lift interest rates'

INTEREST RATES could be forced up during the next quarter as a result of inflationary fears, the latest business forecast published by the Chartered Institute of Management. Rates are expected to decline again later and throughout next year, however. Despite relatively tight monetary conditions and a squeeze on consumer purchasing power in 1977, U.K. output would rise by 2½ per cent in 1977 and by 4 per cent in 1978. Private manufacturing investment and exports would rise strongly through 1977 and 1978, but investment in housing and construction would fall. Government spending would continue to drop, with the public sector borrowing requirement down to £10bn, about £1bn less than was suggested by the IMF, which should produce income tax cuts of more than £1.5bn in the Budget. Assuming a generous income tax cut, the nation's pay bill would rise by 12 per cent per annum after Stage Two, unemployment restraining pay increases in many cases. Further increases in indirect taxation in the Budget were unlikely. After a drop in consumer spending in real terms in the first half of 1977, consumer spending was likely to revive from mid-1977 despite unemployment. The public had spent a greater proportion of income and saved less in recent months and this trend was likely to continue. The sharp fall in the pound up to the autumn of 1976 would exert inflationary pressures in Britain until this summer, but the gradual reduction in the pace of increase in labour costs would tend at the same time to bring down cost inflation. Consequently, the average rate of increase in consumer prices would accelerate in early 1977 and then fall significantly in the second half of the year.

New bid to speed Marathon order

BY OUR OWN CORRESPONDENT

FEARS THAT the entire workforce at Marathon's Clydebank drilling rig yard could be laid off while the Government and the British National Oil Corporation decide which type of rig to order have brought a sharp reaction from shop stewards. Alarmed at the prospect of another month or two of suspension without pay for more than 800 workers, the stewards are to seek more talks with Ministers to try and speed the order. Last Friday more than 50 of the 350 Marathon men employed on sub-contract fabrications for the adjacent John Brown engineering offshore module yard were suspended as the work ran out. More layoffs will be necessary within the next few weeks as the John Brown contract with Marathon expires in April. By then a total of 850 workers could be on indefinite suspension. The rest of the yard's original 1,400 workforce opted for voluntary redundancy. Mr. Bob Dickie, shop stewards convenor, expressed his anger at the delay in placing the Government-financed BNOC order which was announced before Christmas and welcomed the news of an order by Shell for additional work on a platform deck module had postponed the remaining list of options ranging from

Early pensions plan may bridge a gap

BY ERIC SHORT

THE SUPERANNUATION funds office of the Inland Revenue is now proposing to approve company pension schemes which would allow the employer to pay pensions for a limited period only. This would enable companies to meet the growing pressure for early retirement by making some pension provision in conjunction with the State scheme while obtaining the full tax benefits. The new State pension scheme, scheduled to start in April, 1978, will ultimately provide a decent level of pension, especially for the lower-paid. Consequently many employers consider that their employees will have adequate pension provision and a company scheme providing full pensions is not necessary. This view is feasible if employees retire at the normal age—65 for men, 60 for women. But if retirement is early there are problems, since under no circumstances do State pension

Rates rise to pay Clay Cross debt

BY GILES MERRITT

RATEPAYERS in Clay Cross, Derbyshire, will have to pay a debt of £73,000 left by the town's former rent rebel councillors. North East Derbyshire District Council has reversed a policy committee recommendation and Clay Cross ratepayers will have to pay an extra £277 in the pound from April. This will raise £40,241 in one year and will mean an increase of 25 a year for a householder with a rateable value of £200. The debt follows surcharges imposed by the district auditor on the 11 former councillors. A council spokesman said if the increase had not been implemented, it could have led them to losing £18,000 in rates support grants. Councillor Arthur Jeffrey said yesterday: "We are entitled to the £18,000 in rates support grants and it is really inevitable that the rate rise is implemented to ensure we receive the grants."

Air shuttle services may be extended

BY MICHAEL DONNE

BRITISH AIRWAYS is discussing with Aer Lingus setting up a no-reservations shuttle service between London and Dublin on the lines of its successful London to Glasgow and Edinburgh operation. Mr. Roy Watts, chief executive of the State-owned airline's European division, will become director of the new British Airways commercial operations department this spring, said this week that he has also had talks on possible Continental shuttles with KLM of Holland and Air France. He will hold talks soon with Sabena of Belgium. A shuttle between London and Belfast starts on April 1.

BSC chemicals profit boost

THE BRITISH STEEL Corporation's chemicals subsidiary is heading for a handsome profit in the financial year which ends next month. The Chesterfield-based BSC (Chemicals) is forecasting that profits will exceed last year's £7.2m. and the official forecast profits of £7.9m. They could go "well beyond" the latter estimate. The optimism is in sharp contrast to that of the Corporation as a whole which expects a loss on the year in the region of £70m. The outlook, however, for the chemicals subsidiary is not so bright. Demand for the coke it produces is sluggish, and increases in the costs of coal and oil will mean sharply higher costs next year.

Lynch to seek U.N. role in Ulster

BY GILES MERRITT

MR. JACK LYNCH, Ireland's Opposition leader, has suggested Northern Ireland in a speech party's intended to outline his party's political platform in the forthcoming General Election. The Fianna Fail leader told his party's annual conference in Dublin over the week-end that if he regained power he would seek talks with the British Government. However, following last month's extremely moderate 1977 budget, the ruling Fine Gael coalition is tipped to win a second term by a narrow margin. Political observers in Dublin anticipate a positive election response to Fianna Fail's policy commitments. Mr. Lynch made a series of electoral pledges, ranging from promise to end all gerrymandering of constituencies to nationalisation of mineral rights. But it is thought that his chief on the Ulster question will be among the most crucial. Fianna Fail's success at the polls would mean that the question of UN intervention, possibly backed up by international mediation, would be on the agenda. "When the present Northern troubles started almost 10 years ago, we as Government sought United Nations intervention without success. I now pose the question: seven years of costly hostilities, violence and death toll of life and property—time again to consider intervention?"

Loyalists offer to talk to Provisionals

BY OUR BELFAST CORRESPONDENT

LOYALIST PARLIAMENTARY groups in Ulster have proposed peace talks with the Provisional IRA. They say the talks could lead to an end to violence and the withdrawal of British troops to barracks. The initiative came yesterday from the Ulster Loyalist Central Co-ordinating Committee representing most of the main Protestant paramilitary groups, including the illegal Ulster Volunteer Force. It recently adopted a policy of negotiated independence for the Province. The Provisionals in Belfast, who last week finally discounted speculation that a cease-fire was imminent, have said they would examine the Loyalist proposal. The tone of recent Provisional statements, however, would suggest that the chances of real talks taking place are slim. The Loyalist Central Committee said yesterday opposed the setting up of an economic council by Mr. Mason, the Northern Ireland Secretary. It is calling a meeting of elected representatives to elect a council of its own which it feels, could solve the economic and political problems through negotiated independence.

Government 'is costliest'

THE GOVERNMENT has been accused of being the "highest price government of all time," Mrs. Sally Oppenheim, Conservative MP, said in a week-end speech that Labour's mismanagement of the economy was entirely to blame for the rate of inflation. "This Government will always be remembered as the highest price government of all time," she said. The rise in prices over the past three years cannot be blamed on large scale profiteering—profits are firmly controlled by the Price Code. Nor are rising commodity prices entirely to blame—this is hitting us much harder than most other countries because the pound has been devalued by about one-third since the Government took over. "The blame can be fairly and squarely laid on the Government's mismanagement of the economy."

Price of strike newspaper up

THE PRICE of the Northern shire Evening Telegraph, at Kettering, goes up to 4p after selling at 2p since 9th. Lists went on strike 11 weeks ago.

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WILLIAMS & GYLN'S BANK LTD
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National Savings tops £228m.

By James McDonald
NATIONAL SAVINGS figures last month were the highest ever recorded with a net inflow of £194.5m. for five weeks to January 29. After adding accrued interest there was an increase of £228.3m. in the total sum invested in National Savings, the National Savings Committee said yesterday. "National Savings Certificates, with a net increase of £182.5m., are the major contributors towards this increase," said Sir John Amstey, president and chairman of the Committee. "It is evident that in a period of falling interest rates, the 16th Issue Certificates is becoming even more attractive with its return equivalent to 18.78 per cent a year, free of U.K. income tax and capital gains tax. This Certificate is only on sale until March 31, 1977. The National Savings Bank Ordinary Accounts traditionally register an increase after Christmas and on this occasion showed a net increase of £9.6m. But the Investment Accounts, said Sir John, "are a little disappointing with a net outflow of £400,000. "There is little evidence yet of the effect of the new rates of interest of 5 per cent in the Ordinary Account and 10 per cent in the Investment Account." Sales of British Savings Bonds continued to remain at a low level with withdrawals exceeding receipts by £5.5m. "The Trustee Savings Banks have registered a modest increase in funds of £5m. in January, while the turnover of £941m. shows evidence of extensive use of their banking facilities by their customers," said Sir John. The total amount invested in National Savings at the end of last month was £12,472m., compared with £11,372m. a year earlier.

Advertisement for CHUBB Integrated Teller featuring illustrations of people using the machine and text describing its features like 'there's a lot behind a CHUBB Integrated Teller' and 'Chubb reputation for physical security for one thing'.



# The Executive's and Office World

EDITED BY JOHN ELLIOTT

Vending machines for food and drink are now more sophisticated but important factors affect the economics of this type of service. Nicholas Leslie reports

## The mechanics of catering

LAMB and vegetable or a beef curry served in a plastic plate from a tin at has been dispensed by a vending machine may every employee's idea of a mid-day meal. But of the major automatic and catering organisations to be believed, this eating is about to grow along with other systems of automatic food dispensing. Whether or not this will be a reality, however, is to assess. Automatic vending of the variety now in the U.K. originated in the U.S. where machine dispensing is almost a way of life for the general public and many employees. There are, for example, one drinks vending machine for every 20 employees in the U.S., whereas the British has one for every 150 employees.

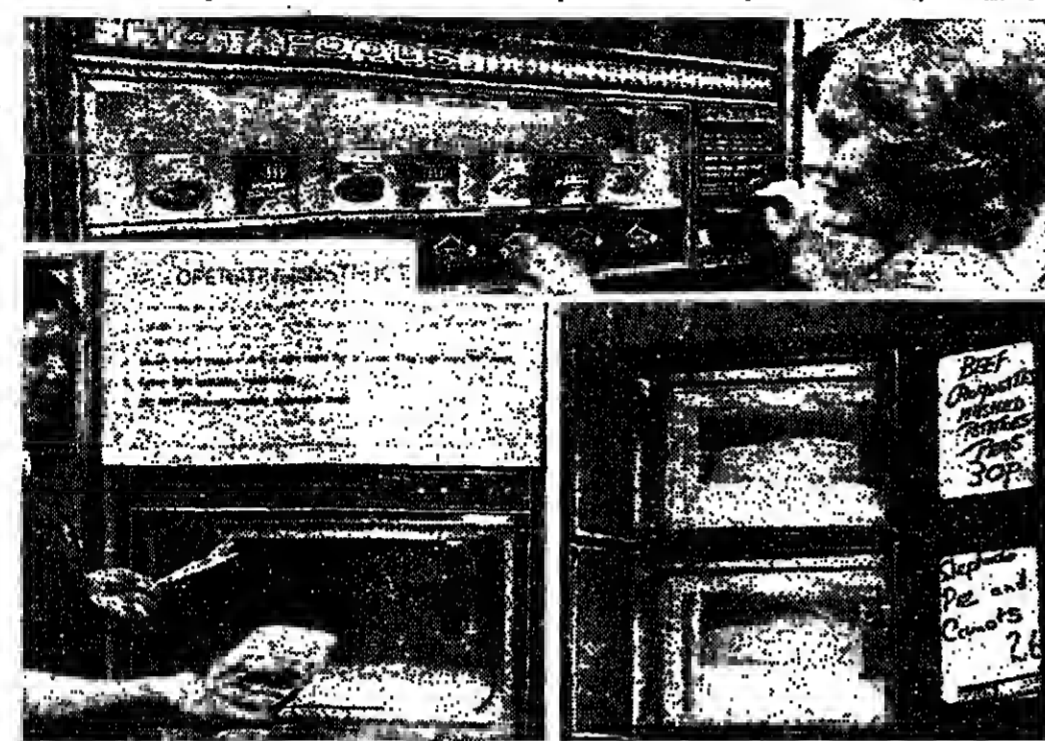
transfer into refrigerated vending machines. From there, they can be removed by an employee and heated rapidly in an adjacent microwave oven. An obvious advantage of these is that the number of kitchen staff can be reduced substantially, since food can be prepared throughout a full working day instead of having to be compressed into a short production time. In addition, food stored on plates in re-

such as GKN Sanker—the U.K.'s biggest vending machine producer—and National Vendors supply this type of machine, which keeps meals in cans with ring-pull tops at a temperature of above 150 degrees Fahrenheit for up to seven days. It is difficult to be precise about costs of hot meal vending machines, since this will depend largely on a company's total requirements. But, as an ex-

EXECUTIVE HEALTH BY DR. DAVID CARRICK  
**The serenity of being fit**  
SEVERAL years ago I was invited to contribute a weekly medical column for a national daily newspaper which was about to be launched. I was interested, particularly when the amiable and venerable editor said that the policy for the new paper was to be "different."  
A tall order, I thought, for all departments from news to features; but how, I asked, did he fancy that a medical column could be different? Fertile as one's imagination might be, such a task would be impossible unless one invented new diseases.  
"Ah!" said the old chap, "that's the whole point. I don't want articles on illness: I want a weekly column on health!"  
I was lost for words for a while but then said that the good editor looked to me as though he had been in Fleet Street for at least 40 years. Aggrieved, he said: "Forty-five, if you don't mind."  
I apologised and pursued my theme. "Do you really believe," I asked, "you being a man with nearly half a century in the Street, that readers want to read about being well? You would hardly print a news story about a bappy wealthy, non-old-age pensioner who had not broken his leg, would you? So how can one hold attention on the lack of disease?"  
"Well you have a point," he conceded, "but that's what the proprietors want." They never got it and, not surprisingly, the paper that was to be different did not last very long.  
Nevertheless, some people do crave for advice as to how to be fit, a laudable desire so long as their true motive is not for eternal youth but for the best ways by which an ageing vessel may be employed to a maximum degree of efficiency.  
Business men and women



other hand, following trial growth in the early automatic vending in the s has been on something of a for several years. And test Industrial Society of catering states that drinks vending is still some growth, the sale has suffered a decline are many reasons for certain situation not the f which have been past ability of machines, their ies in relation to a com- entire catering budget, rhaps the most difficult ec, the long-term human 1. Any company con- the introduction or the on of vending machines re has to consider very ly what is wanted from tem and whether it will eptable to its workforce. of the main arguments omatic vending is that, more economical way of ng food and drink. ly, the beverage machine en the place of the tea n a large scale, despite strations associated with rly machinery and "get uick" operators. Such es did not provide the back-up services for es, which meant that ity and product quality d. ecently, sales of food g machines have prob- eled by the enormous ion in costs of traditional g, particularly labour ch foods as vegetables. way. The falling market ices have, r, also been increasing vicing contracts between ies and vending rs have not been immu- tion either. Additionally, ill economies available vending will only be ed if workforces can be ded to forsake the more ouch associated with mal canteens. A compro- has therefore to be d involving a mixture of vending and tradi- catering. This, in turn, eak companies reluctant



Two types of hot meal automatic vending: Top, food dispensed hot in cans and then transferred to plastic dishes; bottom, meals stored in refrigerated cabinets (right) are heated in a microwave oven (left).

hand-in-hand. But a hot-meal vending machine requires a different set of ground rules. The reasoning behind a beverage machine is that, in addition to saving the labour costs of tea ladies, it also is more convenient because it dispenses drinks whenever needed. Thus, the timing of tea or coffee breaks need not be specified—which may be useful both in offices and factories. It has also been suggested that constant availability of drinks makes for a happier workforce. Similar reasoning is applied to snack (and cigarette) machines, which are very often sited alongside the beverage machines.

refrigerated cabinets can be ample, a refrigerated machine, available, for example, to a night-shift in a factory with only a nominal canteen staff, people on a staggered basis for also, because convenience foods are normally used for this sort of catering less preparation is required and thus less space for storage and equipment is needed. Another application is for refrigerated vending machines plus a microwave oven, to be located at several points within very large factories, with supplies coming from a central kitchen. Many different selections can be housed in this type of machine, and each one can be large enough to cater for upwards of 100 people.

However, despite its convenience the snack machine appears to be making no headway. The falling market indicated by the Industrial Society survey is confirmed by Mr. Elias Fattal, a director of Roboserve, a major distributor of vending equipment, and by Sutcliffe Catering, an industrial catering contractor. Both cite the "better value for money" aspect of a light meal from a vending machine as one of the reasons for the trend.

Machines producing hot meals in sealed cans, on the other hand, are widely thought to be more readily suited to small company with up to 120 or so employees, where it may not be economical to set up full canteen facilities. Companies by specialist operators, but it is

### Company car tax guide

A NEW tax structure for company cars contained in the 1976 Finance Act comes into effect on April 6 and, anticipating the event, Leyland Cars has produced a booklet to give guidance on how it will affect company employees and directors. The booklet, which will be available through all Leyland distributors and dealers, makes it clear that it does not intend to be an authoritative statement of law, but merely a general business guide.

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A grievous loss for Labour

THE death of Anthony Crosland has rightly been seen as both a personal tragedy and a major public calamity. It is poignant to see a man of great vitality and courage being robbed, after many setbacks and disappointments, of the crown of the prize he had always wanted most—the Exchequer—just when it was finally within his grasp.

He was not a member of the National Executive, and the Left-Right balance of the Cabinet can easily be restored. Crosland belonged to the Centre-Right, and that is precisely the spectrum of opinion in which most of the plausible candidates for promotion happen to reside.

It was outdated. But what might be thought about it? The second point is that Crosland was the last major Gaitskellita on the political scene. As a label, of course, this no longer means very much. But it is significant in the sense that he was the last survivor of the post-war generation of political intellectuals whose modern adaptation of Fabianism made socialism not only tolerable but imperative for a large section of the intelligent public.

The re-entry problem

THE CHANCELLOR, Mr. Len Murray of the TUC and Mr. John Methven of the CBI displayed an unusual unanimity on Friday when they spoke of the necessity to find some effective successor to the present restraints on wage increases.

Faced with such problems, it is easy to wonder whether the effort to achieve a further stage of restraint is worth making. The results to date do not appear impressive, and the cost has been high. Legislation, such as the Employment Protection Act, has made unemployment worse: pay rigidities cause inefficiency as well as resentment, and perhaps most invidious, a TUC influence over policy which has produced little to satisfy union members, but has sapped confidence both in the economy and in the powers of decision of our elected Government.

Orderly bargaining
The leadership of the trade unions appears in some ways to be recognising this more readily than the Government. When Mr. Murray gave his warning that a further wage explosion would gravely hurt ordinary families, through still faster increases in prices and unemployment, he not only stated the case for persisting with rational restraint, he implicitly put the argument against a political bargain, if the leadership now recognises that orderly bargaining is in the interest of union members, as it most emphatically is, then that should be an end to the matter: employment and living standards will be higher if costs can be kept in check, and the unions need not be bribed to follow their own interests.

Mr. Carter and the dissidents

"BECAUSE WE are free," President Carter said in his inaugural address. "We can never be indifferent to the fate of freedom elsewhere." He has said the same thing again in his letter to the Soviet dissident, Professor Andrei Sakharov. What is new about this is not the sentiment—it would be very difficult and indeed unnatural for an American President to say anything different—it is the fact that President Carter is putting it into practice. The letter to Professor Sakharov was in direct response to an appeal from the latter for the President "to raise his voice" on behalf of those intellectual dissidents who are persecuted in the Soviet Union and Eastern Europe.

Two questions
All this is in marked contrast to the time when Dr. Kissinger as Secretary of State advised the then President, Mr. Ford, not to see Aleksandr Solzhenitsyn on the grounds that such a meeting might offend the Soviet authorities. Clearly the change is deliberate policy and, as such, it raises two major questions. The first is whether it will prejudice other U.S. policy objectives such as the attempt to reach a second strategic arms limitation agreement. The second is whether such a policy will actually help the dissidents.

Social democracy's gifted theorist

MR. ANTHONY CROSLAND, appointed Secretary for Foreign and Commonwealth Affairs by Mr. Callaghan last April, was one of the most lucid and effective of Labour Party intellectuals but he never really fulfilled his great potential. He had one of the best records of any departmental Minister and a very varied career behind him ranging from Minister of State for Economic Affairs to Secretary for Education and Secretary for the Environment, but because of his lack of a Labour Party power base he came a disappointing bottom of the poll for the party leadership last March.

His death, at the age of 58, robs the Cabinet and the Labour Party of a powerful intellect. Charles Anthony Raven Crosland was born in North London to middle-class parents. His father was a senior civil servant and his mother an outstanding scholar and pioneer of women's education. His background was one of extreme dissent. His father was an active member of the fundamentalist religious sect the Plymouth Brethren, and Tony Crosland never ceased to believe in the virtues of hard work and political radicalism instilled into him at home. He did not object to being called arrogant but he objected very strongly to being called lazy.



His long and varied ministerial career began in 1964 when he became Minister of State to George Brown at the newly-formed Department of Economic Affairs. The following year he entered the Cabinet as Secretary for Education and in 1967 became an enthusiastic President of the Board of Trade. When Labour lost office in 1970 he was Minister for Local Government with responsibility for the portfolio of Environmental Affairs. After election in 1974 he became Secretary for the Environment.

Social democracy's gifted theorist

Wilson opposed it, and in 1970 he was the most outspoken critic within the Cabinet of Mr. Roy Jenkins, then Chancellor of the Exchequer. In the latest round of public spending cuts, fought through the Cabinet in December, he played a major role in the battle to prevent excessive cuts. Although he reluctantly accepted the need for cuts, he recently claimed he had been proved right by the revised Treasury figures.

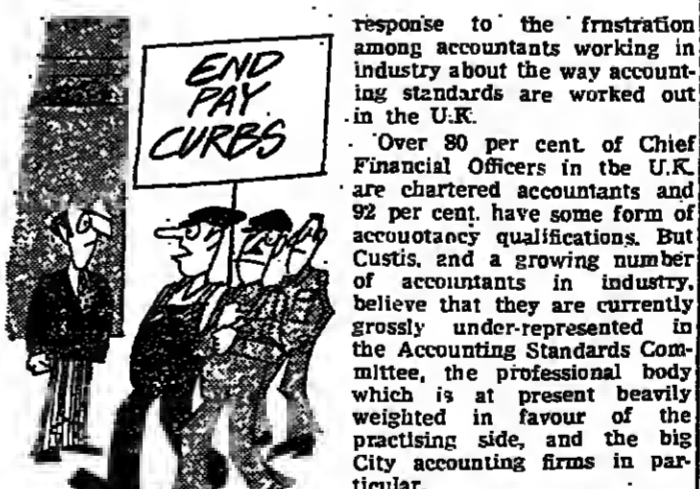
On the surprise resignation of Harold Wilson last March, Mr. Crosland faced an intriguing choice—should he stand himself, or should he once more support Mr. Callaghan this time the favourite. In the event he was one of the first to throw his hat into the ring and his poor showing (he received 17 votes and came bottom of the poll in the first round) was probably partly due to the number of other right-wing and centre candidates. But the contest undoubtedly also reflected his lack of a wide following within the PLP. For in spite of his intellectual standing he had failed to make much headway in the personal campaign for a party base which he had launched in 1970.

MEN AND MATTERS

Happy New Year
Trafalgar Square throbbled with the sound of gongs yesterday as Soho's Chinese community celebrated the start of the year of the snake with a traditional Chinese Dragon dance. It was a big success with crowds of on-lookers beaming in the square and the route through the narrow streets of Soho to Chinatown.

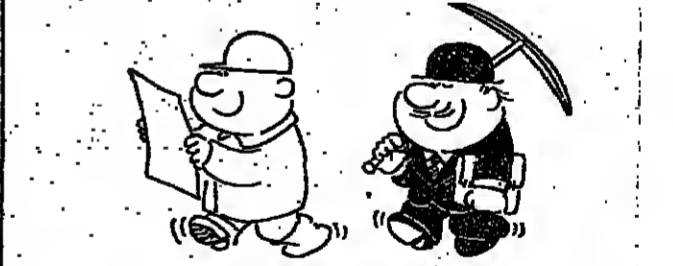
Phone me
Sir Charles Villiers, the man who took over the hot seat at British Steel from Monty Finlayson recently, has now got a new job as an answering service. Or at least that is the gist of the series of advertisements currently being run by BSC (Industry) Ltd. set up by Sir Charles to try and attract new industry into these areas singled out for steel plant closings as part of the Corporation's modernisation drive.

Finance men unite
A world-wide conference of Financial Executives professional bodies is due to take place in Dublin this spring at which the U.K. will be conspicuous by its absence, as there is no U.K. equivalent to you need for profitable financial growth—to telephone him direct. So we tried. He is not exactly banging on at the end of a line waiting for your call, but after being courteously transferred to the mar-



response to the frustration among accountants working in industry about the way accounting standards are worked out in the U.K.
Over 80 per cent of Chief Financial Officers in the U.K. are chartered accountants and 92 per cent have some form of accountancy qualifications. But Custis, and a growing number of accountants in industry, believe that they are currently grossly under-represented in the Accounting Standards Committee, the professional body which is at present heavily weighted in favour of the practising side, and the big City accounting firms in particular.

Apocryphal
A French balloonist crossed the Channel and landed in an isolated field. When he asked a passing stranger where he was he was told: "You're in a wicker basket in a field." The Frenchman said: "You're an accountant, aren't you?" He replied the man: "How do you know?" Said the Frenchman: "Your information is typical of an accountant—accurate but useless."



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about

# FINANCIAL TIMES SURVEY

Monday February 21 1977

# THE COMPUTER INDUSTRY

There is evidence of new growth in European computer development, and this, coupled with EEC attempts to curb the monopoly of the major U.S. companies is giving the European manufacturers fresh hope. Now it is the European companies which are beginning to show the benefits of state involvement.

THE dismal Johnnies in the industry who have the deep-rooted belief that Europeans will be able to stand up to competition, there is a story in a study that has been over-looked in the year-end rush. Research Corporation of Delran, New Jersey, has published the results of a survey of users of large computers and allocated ratings on a weighted basis running from (equals excellent) down to (equals poor) for ten of the equipment from operation and reliability of programming and speed of maintenance.

CDC users were applying their equipment primarily to scientific operations and the remainder principally to business work. That having been said, however, what has to be underlined in the study is that in the three important categories: "Responsiveness of maintenance services," "Effectiveness of technical support," and "Technical support," Amdahl led, followed by NCR, DEC, Control Data and IBM. But these are precisely the points on which so many machine choices have been made in the past, the argument being that "if number one can't do it, who can?"

But it has grown unevenly despite the efforts of the U.S. and other Governments to regulate expansion and police operating practices. It took IBM 60 years to reach \$1bn. profits and only six (1970-1976) to go to \$2bn, this last on a turnover exceeding \$16bn. Over half is generated outside the U.S., thus the corporation is making a handsome contribution to what otherwise would be a far worse balance of payments in the U.S. Yet the U.S. Commission on the preferential purchasing policies member states have practised vis-a-vis the computer companies they are supporting. This support was necessary because of the gross imbalance in development on opposite sides of the Atlantic. The U.S. moon shot cost around \$35bn. Most of the time, companies and research centres working on this vast project were operating at the limits of current know-

ledge. This means that research and development were taking 50/60 per cent of expenditure. It has been suggested that computing facilities within the space programme organisation and its supporting contractors accounted for around half the R. and D. figure. Suppose that still mean that U.S. agencies and companies working for them bought or leased \$5bn. worth of equipment during the build-up to Apollo. If the assumption is out by a factor of two, and it does not take into account work for military purposes, it is obvious that until President Nixon turned off both the weaponry and

NASA funds taps in 1972, the larger U.S. manufacturers were enjoying massive home market support, enjoying a massive advantage over the developing computer industries elsewhere in the world. In 1956, for instance, U.S. defence expenditure on computers was running at \$800m. a year, half of which went to IBM. What the European Governments have spent individually to keep a national company in

version work to do, albeit aided by a number of significant technical advances, including microprogramming made since then. In Britain, ICL has received its last support money from the Government in respect of the merger with English Electric and the creation of New Range, and starts repayment next year. But the success of its small business machines and the acquisition of Singer which gives it a base

2904, erroneously regarded as a small business system though it can go up to mid-range level, and the three machines so far announced at the top of the series—the 2950, 70 and 60—and the 2950 which will be launched very shortly. These are systems in the £400,000 to £2m. and more class. The important point is that the company now has a form of market share through the Singer deal and a manufacturing centre, which, starting from scratch would be enormously expensive to establish.

The one stumbling block could be in learning how to market "small equipment" and training a new sales force to do it, remembering that a complete office computer capable of running an average business now costs less than a Rolls-Royce Corniche. ICL is not the only U.K. organisation to tackle the U.S. market. Logica, a leading software house which has made a name for itself in solving difficult communications problems, has set up a U.S. section and expects to do well because Britain has far more experience of very large commercial networks through its banks than America, where only California has allowed the setting up of many bank branches.

## Changes

It would be wrong to read too much into the report since it is solely on the U.S. market. However this is a market which has directly suffered all the consequences of the RCA, GE and Xerox withdrawal from computing activities and a bewildering succession of acquisitions and mergers. Its computer users must be among the most cynical and since IBM has enjoyed around a 60 per cent share of the market for as long as the majority of the young data processing staff population can remember, it may well have come to be looked upon as part of the scene, like taxation or the weather, about which people may complain, but cannot influence to any great degree. This is one of the many anomalies in an industry which has grown so fast since the war that it needs no slide-rule to predict the year in which automation will take over as the leader, ahead of cars and petrochemi-

cal. Justice Department is doggedly pursuing the anti-trust suit against IBM and is just about half way through examining the evidence. It proposes to present after 226 days of hearings and the preparation of 35,000 pages of transcript. Unless there is a sudden settlement on the lines of the old 1956 consent decree, these figures are likely to double before the IBM defence can be heard, some time early in 1978. The EEC Commission's look at monopolistic practices may thus be an extremely long one and neither actions are likely to have any significant results for several years. In the mean-

time, the Commission has made a number of strictures on the preferential purchasing policies member states have practised vis-a-vis the computer companies they are supporting. This support was necessary because of the gross imbalance in development on opposite sides of the Atlantic. The U.S. moon shot cost around \$35bn. Most of the time, companies and research centres working on this vast project were operating at the limits of current know-

existence is not accurately in the U.S. and Latin America known, but it is believed to be about £900m. in Germany, £300m. in France and £60m. in Britain. In Germany, Siemens has put a very large sum into maintaining a presence which does not go much beyond State boundaries. In France, the newly-formed Honeywell Bull amalgam, with its 47 per cent Honeywell holding, is very heavily dependent on vectored government purchases for survival. It is facing the same tough problem of reconciling non-compatible lines of equipment inherited from its predecessors as ICL faced in 1963, with more con-

ditions. Sales centres have been opened in major U.S. cities and says Arnold Jewitt, director of marketing services, ICL will offer the small business machines 2903, 2903/20, the new 10/220 and the 1500 intelligent terminals as well as point of sale equipment. This is selling to a U.S. market sector expected to expand from \$1.4bn. in 1975 to \$2.2bn. in 1980. The job does not stop there, however. ICL is also preparing to sell the larger machines in 2900. This includes the

Arbat (Arbutnot Latham) has sold several million dollars worth of expertise to a variety of American banks who are paying, essentially, for the Arbat software and transaction handling language. Evolved primarily for foreign exchange dealing in real time, the program suites now cover the whole banking area, including Tele-processing. Arbat is a small company by Logica's standards but the rewards for a good product in the U.S. are still great. Whether ICL will have to face the same barriers that prevented Ferranti from selling an Atlas to a major U.S. defence contractor remains to be seen. After all the complaints made by U.S. controlled companies resident in Britain concerning public sector single tender purchases this would be a supreme irony.

It is true that under the French Government deal with Honeywell, medium-scale processors are exported to the U.S. But in the ICL case, whole systems will go out and the return must be far higher. Jewitt is not perturbed by the apparent immense disparity in the research expenditure between ICL and IBM, pointing out that the latter does its work in house while ICL is reaping the benefit of the development at ICP, the ICL/NCR/CDC peripherals group, the work done by major integrated circuit manufacturers such as Texas and Motorola to keep abreast of IBM and the fact that the U.K. is still a major software centre. The total R. and D. expenditure ICL has access to is thus many times more than allowed for in the accounts. At the same time, Jewitt points out, the bigger the company, the greater the customer inertia. Users do not like radical changes and are becoming increasingly militant through user groups—not only against price rises.

Expertise

## Turning the tide

By Ted Schoeters

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LATE LAST year, Hewlett Packard, who are acknowledged market leaders in calculators and who claim to be second in the mini-computer field, disclosed that a total of \$20m. had been spent to perfect a method of making smaller, faster and more reliable components for use in the equipment it will be selling from about the end of the year.

Silicon on sapphire (SOS) is the name of the process. It had been attempted before in Britain and the U.S. but abandoned by early developers because of the cost and—in one instance—because the product was unsatisfactory, though there certainly would be a military device market for circuits as robust and versatile as SOS is expected to produce.

The pay-off for Hewlett Packard comes when it starts to offer higher performance equipment without increasing prices, or substitutes complex, though reliable, SOS products for a host of earlier components in a standard product costing less to manufacture.

IBM has also disclosed that after something like ten years of development it has succeeded in building ultra-fast Josephson switches and has developed the technology to manufacture them on an industrial scale, if required. Josephson is an extremely difficult technique if only because the "switch" is just a few atoms thick and what IBM spent in development is a matter of pure conjecture. It cannot be far off the figure for SOS and is probably more but as Dr. R. E. Gomory, IBM vice-president and director of research said—and he wields a \$1bn. a year budget—"If we don't do it, who can?" IBM now has a switching device so fast that contemporary instruments cannot measure it.

When, some three years ago, ICL unveiled the first two big machines in its New Range, a major talking point was the high packing density achieved in the processors because of the way in which the components had been interlinked by using circuit boards with as many as 16 layers of connection planes — this tidied up the plane to plane wiring (back wiring) very considerably. At a time when all competitors' machines still looked like mad spaghetti once the cabinets were opened, this was, however, no cosmetic move by ICL. Far from it. The design of the new range was a highly automated operation

and probably the first instance in the industry where computers were used to design the machines that would supersede them. The close packing meant that signal paths could be made that much shorter with a gain in processor efficiency.

But multi-layer boards were not new in Britain. Ferranti had been using them in military devices since the early 1960's and English Electric had elected to use eight-layer platters in its version of the RCA machines it launched under the title System-4. Unfortunately, it took a long time to get its platter technology right, but this was only one of the reasons why it was eventually absorbed by ICL to form ICL.

While other manufacturers tended to treat the advantages conferred by the packing technique as of little significance, it is hard to hide that they all have been introducing it as new models have appeared on the scene.

What the development cost Ferranti/English Electric/ICL is almost impossible to say, but certainly it took many man-years both in the companies and among suppliers, and involved a lot of technology not normally associated with data processing. The conclusion seems to be that in "conventional" data processing all innovation now tends to be extremely expensive and its application to existing lines of equipment comparatively slow. This state of affairs was predicted some years ago at a London conference: "The Fourth Generation."

Fastest

Ian Barron, then managing director of Computer Technology, and the designer of what was in its time one of the fastest small machines ever built, told an amazed audience that there would be no fourth generation—understood as a new series of machines breaking with their predecessors in many ways. The industry, largely IBM, could not afford it, he asserted, pointing to the company's financing problems with the 360 as justification.

If Mr. Barron had said users could not afford a fourth generation, his audience might not have been so surprised since IBM user investment in software has been estimated at as much as £60m. He did not rule out new ranges of machines but stressed that they would be little more than improvements on their predecessors, taking in bits and pieces of new technology as it became available.

This, in fact, is what has happened since FS (Future Systems), which IBM was developing as a distributed processing approach to computing, was largely shelved nearly two

years ago. One of the consequences of this moratorium on sweeping changes was underlined by Christopher Strachey, one of the greatest authorities on the man-machine interface, who said that if no one would experiment with a variety of machine architectures the likelihood was that the whole industry would blunder ahead with the wrong machines, with the wrong techniques, and a Chinese Army approach to software development.

At the same time, he foresaw that users would abandon the passive role they had taken during the "gee-whizz" period of the early announcements. This has also happened, particularly among the bureau operators, many of whom like Com-Share and TSI, do their own maintenance. Meanwhile, run-of-the-mill users, particularly those with the larger machines, are not hesitating to use a great deal of supporting equipment that the original supplier is not keen to maintain, but has to by law.

Since the London conference, which oddly enough did not appear to have much to say about small computers using the latest and fastest circuits, the minis have made deep inroads into the markets hitherto dominated by manufacturers of larger general-purpose equipment.

Minis originated mainly because of the need for extremely fast equipment to control missiles or production lines. While their designers were under sharp compulsion to make them able to accept a fast-running stream of information and act on it according to pre-set instructions and thus seek high performance components, they also had to bring in the highest reliability. One cannot just stop controlling a turbine or a petroleum refinery and hope to plead a faulty component.

In their 15 years or so of existence, minicomputers have split into a dual market of small business systems and general-purpose equipment which has found its way into such items as cash dispensers, telephone exchange control, machine tools, traffic control and mass spectrometers, just as if the processor was "only another component."

But even treated as a component, it needs software, and this has frequently not been immediately forthcoming in the past since many mini/makers preferred to mass-produce for other manufacturers rather than get bogged down in the end-user market. Turned into a small business machine by a host of entrepreneurs, the mini soon showed its origins at that there was a vast untapped market of small companies whose only aid was accounting equipment with very few claims to computing

ability.

So, for the past five years, several of the most significant names in minicomputers have spent a great deal of time and effort on getting their equipment software repositories compatible with those of the large manufacturers. The latter have undoubtedly felt the threat, particularly since the term "distributed processing" was coined by Cdr. Grace Hopper, to describe a situation where several small machines installed at different points in a company where information arises, can process it immediately and send to a similar management machine only data relevant to it.

Demonstrably cheaper (one-quarter to one-third) than the totally centralised solution, this technique is causing a great deal of rethinking by the traditional builders who, to a man, have brought out their own minis—the last being IBM's "Series I."

Reliability

All this is taking place against a background of rapidly declining costs for electronic devices which are progressively becoming more reliable, while the large producers are faced with the added internal strain that they now can produce the same amount of computer power with one-sixth the labour force that would have been needed ten years ago. It affects the mini-production lines too, but not anything like to the same extent.

Both groups are sharply affected by soaring costs of software and a considerable amount of effort is going into making this ingredient of computing less people-intensive by having it written by computers. The "Adam" machine is programmed to establish what is required to do by question and answer with each new user and it represents one big step along this road.

This is the appropriate point to bring in the microcomputer, a calculating and correlating device which has been shrunk by photographic reduction methods to go on the surface of a tiny piece of silicon. Software will be its Achilles heel for some years to come though it will be used in millions as a "clever component" to do left to chance.

Its inception goes back a few

short years to 1971 when Intel of the U.S. was asked by major Japanese calculating manufacturer to produce a complex chip which can understand a number of novel operations. Intel suggested that it might be better to take a more general purpose unit—a large integrated circuit—with ability to carry out several operations under instruction.

And so the Intel 4004 was born, the first microprocessor limited in scope but soon to be joined by faster and more flexible micros, the 8008 and 8080 and the Motorola 6800, together with comparable products from every major manufacturer who survived the bitter integrated circuit development and marketing battles of the 1960s.

These devices, which had unit costs of typically \$10, \$40, are finding their way into products from washing machines and cars to other computers and their peripherals. This last area is important outlet. IBM, Hewlett, Burroughs and NCR are making use of them in the later products.

But they are not easy to program. It has been found that 49 per cent of applications need over 1,000 man-hours programming effort and a third need more than 50 hours. And the makers of primarily production equipment with little or no wish to become involved in such jobs. Kvanme of National Semiconductors has, in fact, gone so far as to say that in time the problem will be solved by putting together the appropriate instructions by attaching several preprogrammed devices to a micro-board.

For the user, this competition is all to the good but it does not absolve computer staff to close and continued attention to developments, particularly the U.S. and Japan. For small user, wise choices are more imperative than ever since micros, small discs, plays and printers can be together by most electrical engineers to make a system at less than half the price of traditional manufacturer's charge. Building and running is one thing; maintaining and expanding is only too frequent left to chance.

Ted Schoen

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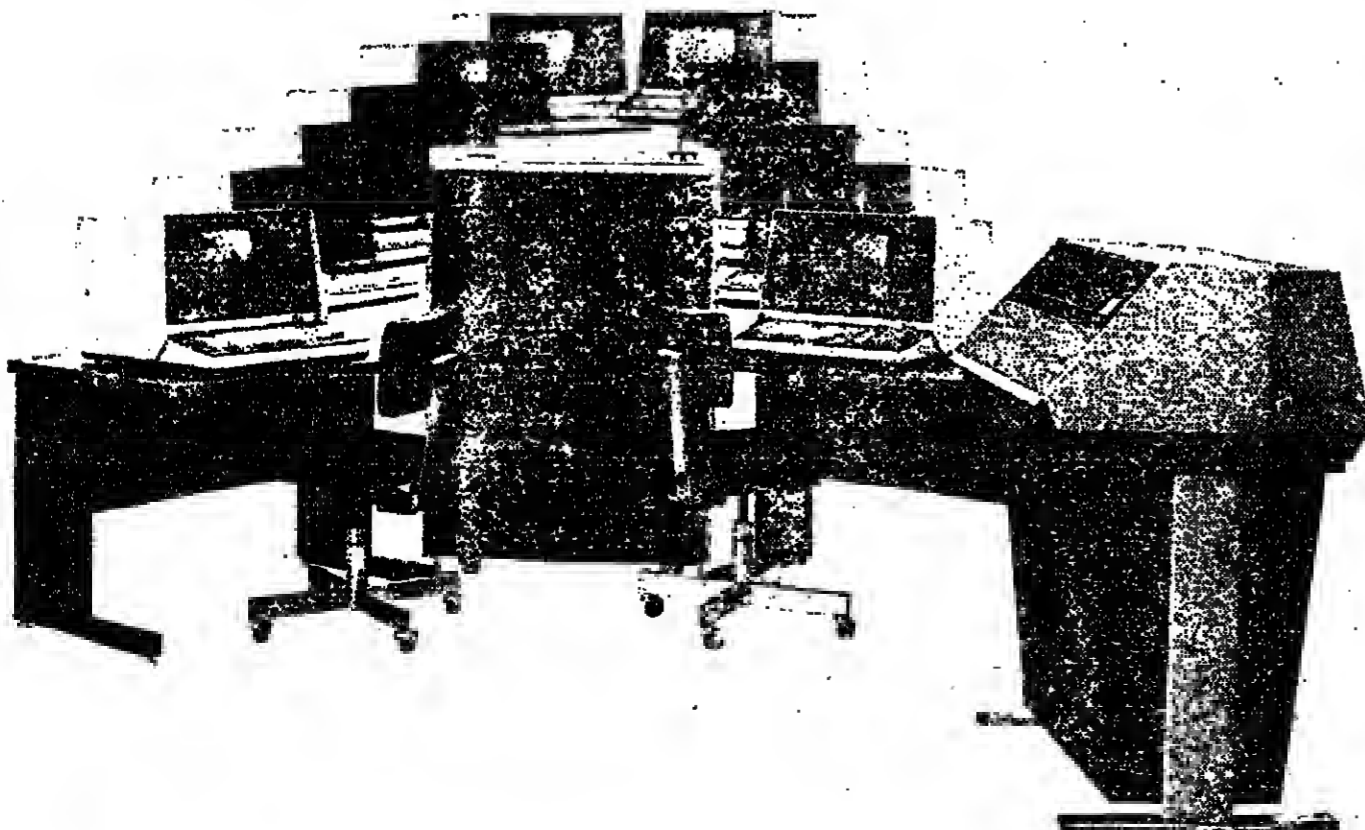
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Support for software

THE SOFTWARE industry in the U.K. still has the power to confuse observers by virtue of the multiple roles it plays in computing developments.

It is as if in theatrical terms we had suddenly seen the rise of entrepreneurial actor managers and writers from the ranks of the leading critics. A mere ten years ago the role of the software houses was largely used to making better use of the standard tools supplied by computer building firms. In 1977 these same firms, plus some aggressive newcomers, are creating computing concepts which have to be taken account of in the product development plans of even the largest organisations supplying both big and small computers.

IBM has released in the U.S. and will soon make available in Europe its small computer which can only be put to work by either large users or users employing the services and skills of software firms. This fresh initiative from IBM, which marks a distinct change of course in IBM history, has not come about as a generous gesture. The rate of use by large users and software firms of minicomputers from sources such as Digital Equipment and Data General has reached proportions which justify the supply of alternatives from IBM.

The IBM move has furthered the cause of computer-based product creation in no uncertain terms. The software houses of the U.K. have made it known to the government that the import bill for electronic products is perhaps less significant than it might at first seem. Below the power of the micro-computer can be seen the emerging use of the micro-computer. Basically, the micro-computer is a single circuit

encapsulation of a processor which can be mounted on a printed circuit board along with memory and peripheral linking components to form a complete computer system on very few boards (in some simple cases only a single board) and this can be put to work on tasks which a few years ago would have needed some £20,000 or more of minicomputer and associated electronics.

In the last few weeks one British software firm — Computer Analysts and Programmers — has not only claimed that the resulting desk top computers can be bought for £7,000 to £8,000 but that they can be used by a single clerk or executive in the manner of the bike in the bike shed.

Performance

That is to say that the familiar pattern of squeezing the last drop of performance and use of a computer in the office is irrelevant to these cheap products. The idea is that the business leverage of a local file processing unit to a single executive is economic justification in itself and the so-called idle time can be ignored.

A further claim by CAP's chairman, Alex d'Agapeyev is that the most eager buyers for this new style of computing product can be found in the U.S. Or at least, that in the U.S. there is sufficient excitement in developing these products to warrant a full-scale marketing effort of the development system which CAP has built to be used by a new breed of wholesalers of office automation systems.

Only time will tell about the validity of all these claims, but the basic ability of the U.K. software firms to compete effectively in technical terms with

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The National Data Processing Service





# THE COMPUTER INDUSTRY III

## Modern data networks

ELY BECAUSE of the switched network can be visualised as a number of "packet exchanges" linked together in a ring. Users can link to the network at any exchange, and feed their data to the exchange in the form of short bursts or packets. A continuous stream of data packets is circulating in the ring connecting the exchanges, and once a user's data reaches the exchange to which his destination computer is connected, his data is removed from the stream of packets and transmitted to the "host" computer.

ern data networks have a long way since the first started installing enormous star networks, one of two very computer centres serving thousands simple terminals installed in branch banks are beginning to want to communicate with a central computer in a variety of different ways both within and out their own organisations. Many of these computers are dissimilar and perhaps incompatible.

The solution proposed is the data network, a universal to which any computer can be linked, provided it can meet all the needs and procedures established by the network operator. In principle, the idea is simple, and it works. Several networks, either private or public, have been running for years, examples being the TPA network which links 100 dissimilar mainframes in computers in research centres throughout the world in the U.K., and the inter-airline reservation network.

The two examples highlighted here are in agreement. ARPANet its packet-switched network, is circuit-switched. In simple form, a packet-switched network can be national public packet-switched network. Transpac, due to come into service in the summer of 1978.

### Complex

In a large packet-switched network, the arrangement is more complex and each exchange is linked to all the others by at least two different paths for security. Thus there is no direct dedicated link between the sender and the receiver, merely a common highway along which messages for many destinations travel together, like a motorway with multiple exits.

The advantage of this approach is that in theory it is much more economic in its use of fixed telephone lines or satellite channels.

The alternative is the circuit-switched network, where every time a user wishes to send a message, a dedicated channel is set up between the terminal and the host computer for as long as data is being sent. But in many cases, this ties up lines for long periods when only small amounts of data are being sent. The connections to the network are simpler, particularly if data is sent to only one computer or type of computer.

The arguments for packet-switching as opposed to circuit-switching are finely balanced. This is evidenced by the fact that West Germany has begun to bring into service a public circuit-switched network, EDS, while France is working on a

was that EPSS and a circuit-switched network might be offered as alternatives, but the Post Office will only proceed when it is sure of what users really want and will use, and users are either waiting to see what the Post Office will offer, or proceeding in the belief that whatever may come will be so far in the future that they must proceed with their own private networks.

An example is SIA, the Victoria-based bureau owned by CISI, the computer services offshoot of the French Atomic Energy Authority. SIA is increasingly trying to meet demand from users all over the U.K. for local-call access to its CDC 6600-Cyber 72 mainframes. CISI in France is planning to replace its internal bureau network with links from all its computer centres to the planned Transpac network. As well as serving U.K. customers from London, SIA would like to be able to offer an expanded range of services direct from France. Had EPSS been compatible with Transpac, it would have provided an attractive solution to both problems. As it is, SIA is unable to provide an adequate IBM service from CISI's 3605 and 3705 in France, and to meet the demands of its users is having to build up an ever more comprehensive private network in the U.K.

As recently as 1975, the Post Office talked in seminars about the probable introduction of some kind of circuit-switched network which might be implemented towards the end of the decade, but public spending cuts are pushing this far into the future. The idea

Two significant developments of the concepts, particularly in Britain and France, the battle is by no means won. In Scandinavia, the four national PTIs are going ahead with their own Nordic Dataneet, which will use circuit switching. Packet-switching was rejected because, according to the Danish computer-stored databases with nodes in London, Paris, Frankfurt and Rome, will use the X25 standard. And IBM, which has been regarded by many as trying to impose its own incompatible communication standards on the industry, has gone some way to confounding its critics by announcing an X25 line adaptor for its Systems Network Architecture communication terminals for the banking, retail and general purpose markets.

### Research

Initially, Euronet will be a private network used mainly by research establishments, but the intention is that it should ultimately become a general-purpose public facility. Already Italy is considering putting in a number of Euronet nodes as an alternative to establishing its own internal national data network.

However, despite the tremendous enthusiasm for packet-switching and for the X25 standard which is to be found among a number of articulate pioneers

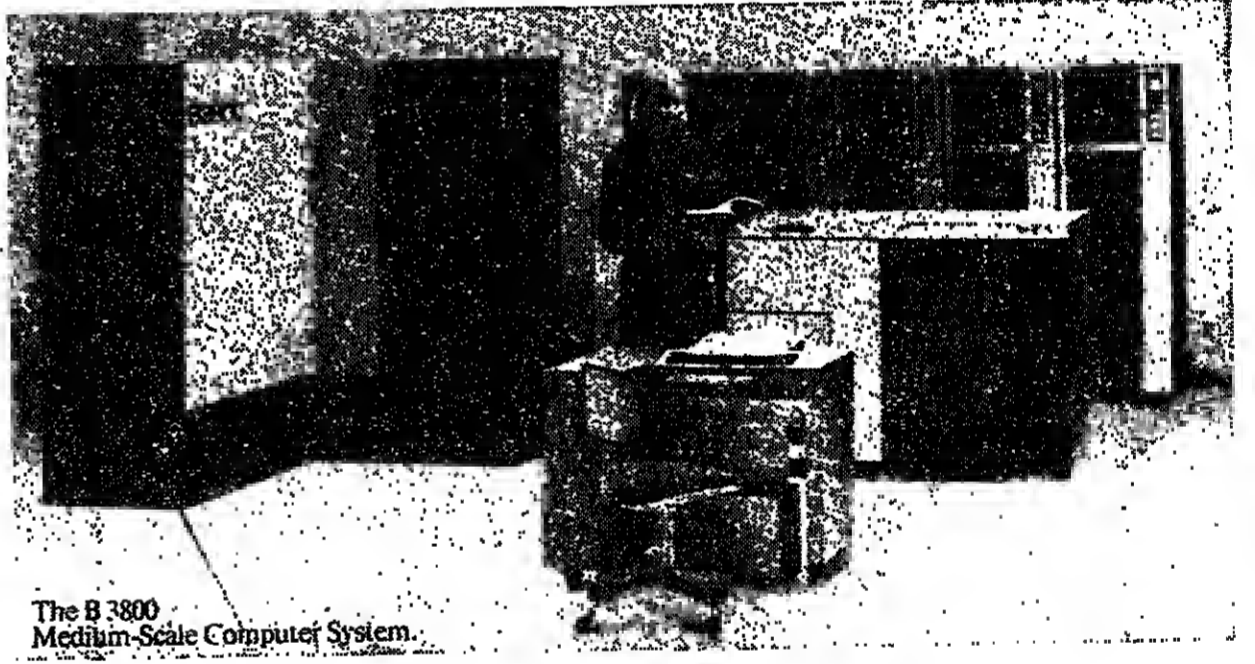
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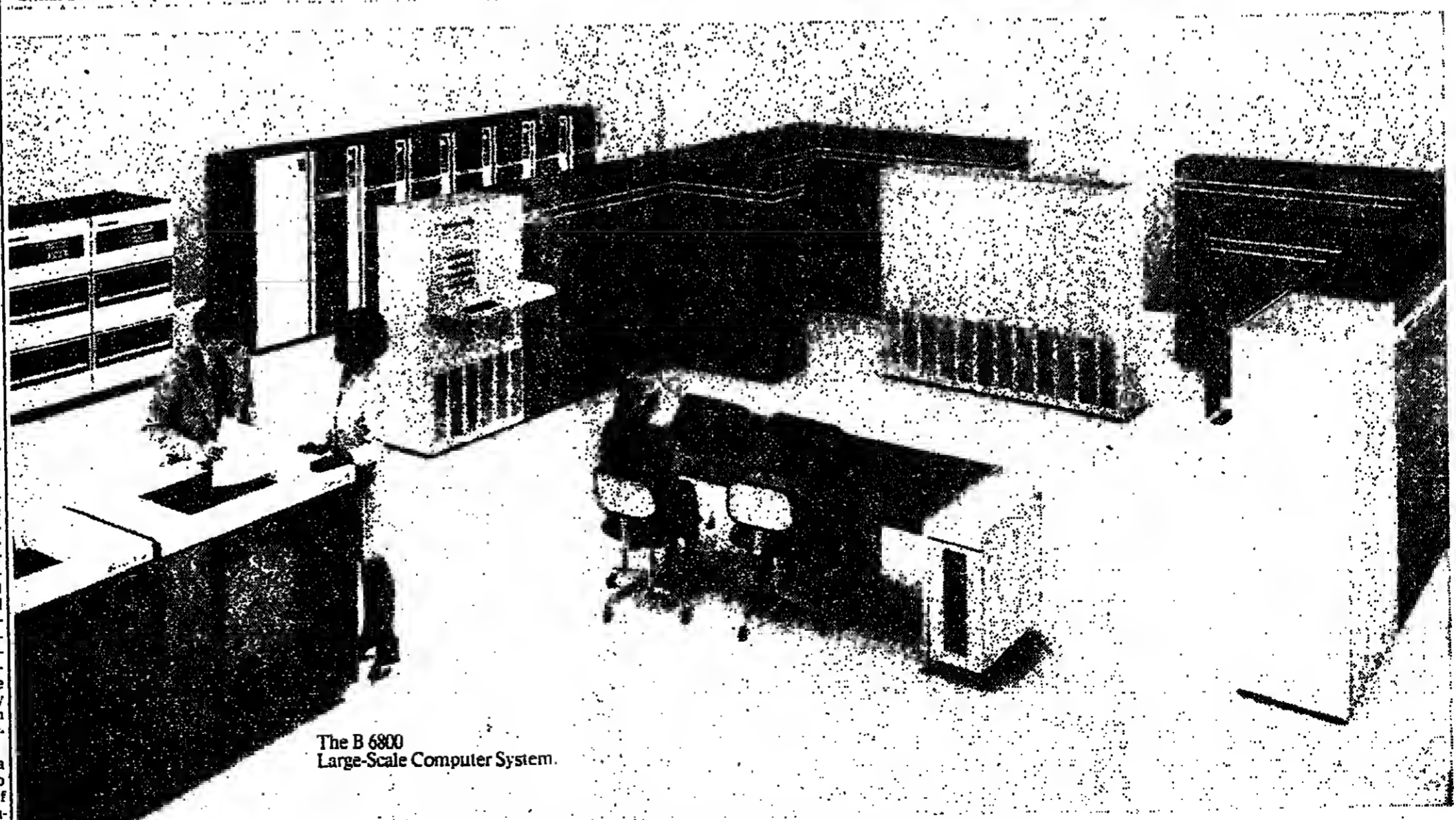
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### Software

CONTINUED FROM PREVIOUS PAGE

ers in the world is not to be scoffed at. U.K. firms have won prizes in the demanding of pushing technology by the grants of computer cost-effective areas of by the conventional suppliers.

European advanced application is shaped a little differently from U.S. history, but is less impressive. The use of telecommunications in Europe has undoubtedly been a handicap in firms specialising in computing, but in industrial automation, in real time applications and in time sharing operations, the best in Europe rank with the best in the world and generally cost less to produce and keep.

his experience is in being round the world then nations based on U.K. through investment funds must be over-Setting up a marketing in, whether in Europe or U.S., is not a cheap

program products side of has now forged enough and operating subsidiaries able to claim that it can Europe as a single market. past year, only IBM sold program products than of CAP did in Europe. of these products are at the mass of IBM users, users dominate the Euro-commercial market. CAP's able sales to them based in U.S. products, will enough cash flow to that future products can be developed locally and perhaps U.S. penetration in the

to tackle the U.S. market has turned to both government and investment group. The National Enterprise Board and Charterhouse form the basis for CAP's

the past few years the National Computing Centre has a software product development in a limited way acting on behalf of the Government. One of its products - Datamanager the MSP software firm - is fit to be salable in volume. The head of MSP, Gomes da Costa believes firm's product and claims it is the leading candidate for government support in over-markets. There is little doubt that these market claims and

pointers are being taken note of in the Government offices of the Industry and Trade departments.

But the long haul picture is still thought to be the key to future prosperity and export earnings for the U.K. software industry as a whole.

The NEE has slightly worried the members of the Computing Services Association by its selective approach to investment. As far as can be known at the moment the intention of the NEE is to inject funds in some half-a-dozen U.K. firms with overseas development potential through its INSAC subsidiary.

Although the fund injection is welcomed by all in computing service industry quarters the part-ownership style of investment creates many worries where future home market activities are concerned.

### Preference

There is a feeling that undue preference will be shown in Government and nationalised sector projects in computing towards firms entering the INSAC fold. In general it is also believed that as much may be lost as gained by carrying an official Union Jack label in some overseas markets which are very wary of linking their domestic developments to any foreign Government influences.

Both in the booming continental European market and the still hopeful Middle East market it is thought that government funding is only needed for product development in software which cannot be achieved by profit siphoning. This aid seems to be achievable by transforming the NCC's software products scheme and by close liaison between government research and leading firms. The problems hardly seem to justify direct NEE stakes in a chosen elite of U.K. software and service houses.

The CSA has recently made a determined bid to draw out into the market-place the skills of government research establishments active in computing. The director general of the CSA, Alan Benjamin, says, "The special problem solving skills of government research establishments and some university sites are a great potential source of strength to the U.K. economy. Our members need to be able to garner experience in working with these institutions in a very positive way. We believe that the U.S. firms are our main competition and they do have solid experience of collaborating with government funded research."

Hedley Voysey



# THE COMPUTER INDUSTRY IV

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MANY AMERICAN and some European observers expect the Japanese challenge on the European market for computing equipment to take shape this year and become serious by the end of the decade.

A study of the background to this latest manifestation of Japan's drive to compete in all new technologies hinges on the latest annual economic survey of Japan published by OECD which points to a continuing improvement in the Japanese economy.

Obviously Japanese prowess in areas such as consumer electronics, motor-cars, steel and shipbuilding will be a greater worry to the government of the U.S. and the EEC than Japan's newly-formed confidence in the computer market place. Nevertheless western Europe and the U.S. can no longer afford to ignore the Japanese challenge in computing.

Recent reports have drawn attention to the new hardware launched over the past two years in which Japan's builders quite sensibly have chosen to develop systems which are compatible with those of IBM, the world leader in most sections of the market.

It is not always realised that the Japanese home market is now the world's second largest in national terms after the U.S. Until recently that market was protected from foreign competition by a series of import controls, both quantitative and qualitative. The removal of quantitative controls has, in theory, left foreign companies free to take as large a share as they like. In practice there are still import duty hurdles and other less tangible factors which will make it difficult for foreign firms to gain a foothold. As in the U.K., govern-

ment bodies and other public institutions are expected to use the domestic industry. Finance is more readily available for leasing Japanese machines. In addition there is the distinctive writing system which needs more sophisticated input mechanisms than western equivalents.

It is difficult to quantify the advantages held by the domestic industry resulting from the factors described above. Nevertheless in the long-term it is the Japanese computer industry which will stand or fall by its technical competence and marketing strength. Of the former, there seems to be little doubt though there are few published comparisons. Its marketing strength is less easy to estimate.

### Target

In this context it is interesting to note that the 1976 target for the number of general purpose computer installations in Japan was 38,000 giving it a level of computer investment equivalent to that of the U.S. in 1970 and roughly equivalent to that of France and Germany nowadays. It now looks as if this target will be comfortably exceeded. However, quantity of investment is one thing, quality is another.

It has long been suspected that the Japanese user lacked the sophistication of his American counterpart and, more importantly, so did the Japanese manufacturer. The Japanese expect to produce the next generation of computers early in the 1980's and to develop these machines, plan to invest over £300m. over the next eight years. This onslaught has been con-

trasted with IBM's apparent lack of interest in a new generation of general purpose machines. IBM recently announced a new series of small computers and also has taken a stake in Satellite Business Systems, a consortium established to provide satellite data communication links through out the U.S. There is little doubt that IBM is slowly downgrading the significance of large mainframe computers.

Now the Japanese manufacturers have always modelled themselves on IBM at least insofar as technical developments are concerned. There is, however, no sign that they have lowered the priority they have traditionally placed on the large general purpose computer. Similarly in the United Kingdom there is little evidence that ICL has lowered the priority it puts on centralised mainframe-based systems. The success of the small business computer, the 2903, has not altered ICL's determination to market an up-to-date equivalent to the 1900 range.

In addition to providing substantial funds for the development of new hardware the Japanese Government has invested in a number of major application areas. For example, in 1974 the Ministry of Health, together with the Ministry of International Trade and Industry, laid down plans for the development of a comprehensive medical system which

included an area medical system, an emergency medical system, and a hospital automation system.

Plans are well advanced for the establishment of a comprehensive information system cutting across all aspects of life including television, shopping, facsimile, traffic control, and computer-assisted instruction. Fundamental research started in 1972 and since 1974 work has been directed towards the development of machine prototypes and software. Meanwhile, experimental operation of the system in two towns is helping to evaluate the technical reliability and feasibility of the system.

### Comprehensive

A five-year project was started in 1973 with a budget of over £10m. for the development of a system for transmitting information regarding the best route of travel and other traffic information to individual cars on the road. The ultimate aim of the system is to relieve traffic congestion and, as a consequence, prevent traffic accidents and pollution.

During the period 1961-74 the Japanese exported computers to the value of about £60m. According to the Finance Ministry's Customs statistics, almost half of this sum is accounted for by peripherals. IBM Japan exported the bulk of the mainframe computers. According to

MITI, the ratio (by value) computer exports to total computer shipments by Japanese computer makers is expected to increase to between 15 and 20 per cent. by 1980 in comparison with the present ratio of less than 1 per cent.

To achieve this goal, it will be necessary to increase exports of mainframe computers rather than concentrate export effort on peripherals and terminals. To this end MITI intends to set aside in the fiscal year 1976-77 special export loans to be made by the Exim Bank of Japan to computer manufacturers. These loans, which may amount to around £2m, will help finance overseas systems for overseas rental. MITI has decided in favour of Exim Bank loans to compensate the manufacturer still in the balance. There is no doubt that the Japanese Government will not allow to fall foul of a lame policy. Further rationalisation is likely to be the order of the day.

Ultimate success on a wide rather than a national basis will depend on the ability of the industry to forecast trends in technology and to provide effective marketing organisation.

Dr. J. O. Jenkin  
Imperial College

## America still dominant

EVEN AFTER years of cajolery by the Department of Commerce, most American manufacturers still treat exports as a luxury of very secondary importance to the home market. The two obvious exceptions to this rule are aircraft and computers. Other industries, such as cars and chemicals, contain giant companies with massive overseas interests, but most of their non-U.S. revenue stems from foreign manufacture. To some extent this is true of computers, but the sector still provides a healthy trade (and licensing payments) surplus for the overall national accounts.

### Impetus

The reason for U.S. domination of the world computer industry are now legendary. They include the impetus of the space programme and of massive military development and supply contracts. Equally important has been the existence of a unified market of over 200m. people, many of whom still epitomise the entrepreneurial spirit (for financial and social reasons): not a few of the big U.S. computer names climbed the ladder with the help of European inventions which they exploited far more quickly than their British or German counterparts.

Once rolling the U.S. computer machine has proved all but impossible to slow down, as many a weary official in the

European Commission would testify. Taking the mainframe manufacturers alone, both IBM and Honeywell Information Systems (pre the CII merger) generate over half their revenues outside the U.S., with Univac not far behind at just over 40, and CDC with 32.

Of all the sectors of computing (microprocessors apart), U.S. dominance is strongest in medium- and large-scale computers (the so-called mainframe). With the proviso that accurate figures are almost impossible to obtain, due to the difficulty of defining the relevant market (a favourite but strong argument of IBM in its anti-trust cases), the most useful semi-official figures are contained in documentation for the EEC Commission's four-year "Informatics" programme, presented late last year. These give U.S. companies 78 per cent. of the installed world market by value (IBM alone accounting for 56 per cent.), against 5.8 per cent. for the Europeans and 4.7 per cent. for the Japanese.

The more rapidly growing world market for "peri-informatics" (mini) and microcomputers, peripherals and terminals) is almost equally under U.S. hegemony, to the tune of 70 per cent. But domination may be too strong a word for the U.S. position on the EEC market for Europe, in spite of all

peri-informatics, if one of the Commission's figures must be some doubt of them, since they do not tally with those for the whole European market reported by the IDC organisation). EDP, U.S. companies holding 81 per cent. of the European frame business, and 65 per cent. of minis. By contrast SOBEMAP survey for the mission gave U.S.-owned companies 75 per cent. of the market for "computers systems," but only 52 per cent. in the case of minis and computers. They held 50 per cent. of software, the survey suggested. All figures were calculated from the CII-Honeywell Bull report effect.

### Associated

What are the chances of weakening of U.S. dominance? Ask almost anyone in IBM and he will say it all depends on Japan. The continuous systematic weeding-out of weaker Japanese companies re-grouping of the strong two closely associated Tokyo Government to push surms into the industry moves have no parallel in Europe, in spite of all

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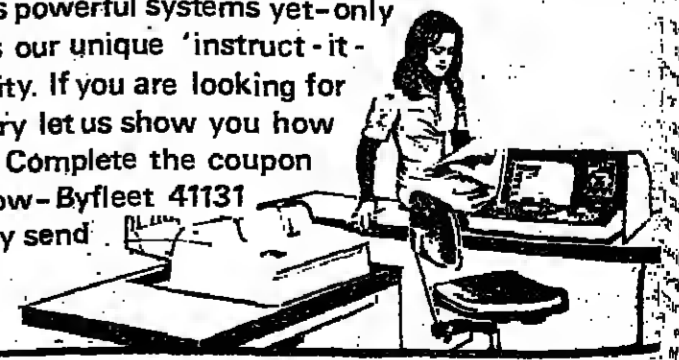
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THE COMPUTER INDUSTRY V

Europe back in contention

ER THE organisational... of the last five years, the... computer industry is... in a stage of relatively... reconstruction.

talks have been held with... Japan's Fujitsu). The... process goes forward... against a background... of statements from Bonn...

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Proposals

rtners... former partners in... Siemens and Philips... withdrawn to their national... Philips has also taken... painful step out of main... computing, but both of... seem to have suffered... short-term damage to their... computer businesses.

For the moment, however... most European governments, as... well as the EEC Commission, are... directing their main attention... towards what the French call... per-informatics (a vague... phrase adopted by the EEC for... diplomatic reasons, and generally... covering mini/micro-computers, peripherals, terminals—and sometimes even... software). However defined, it... appears to be growing more... rapidly than data processing in... general.

supplement, rather than replace... the support programmes of indi... vidual governments. This... underlines the importance of... the French decision to restructure... the national mini-computer, terminal and peripherals industry... into two or three groups, a... process which is moving forward... only in fits and starts, in spite... of extensive financial inducements.

America

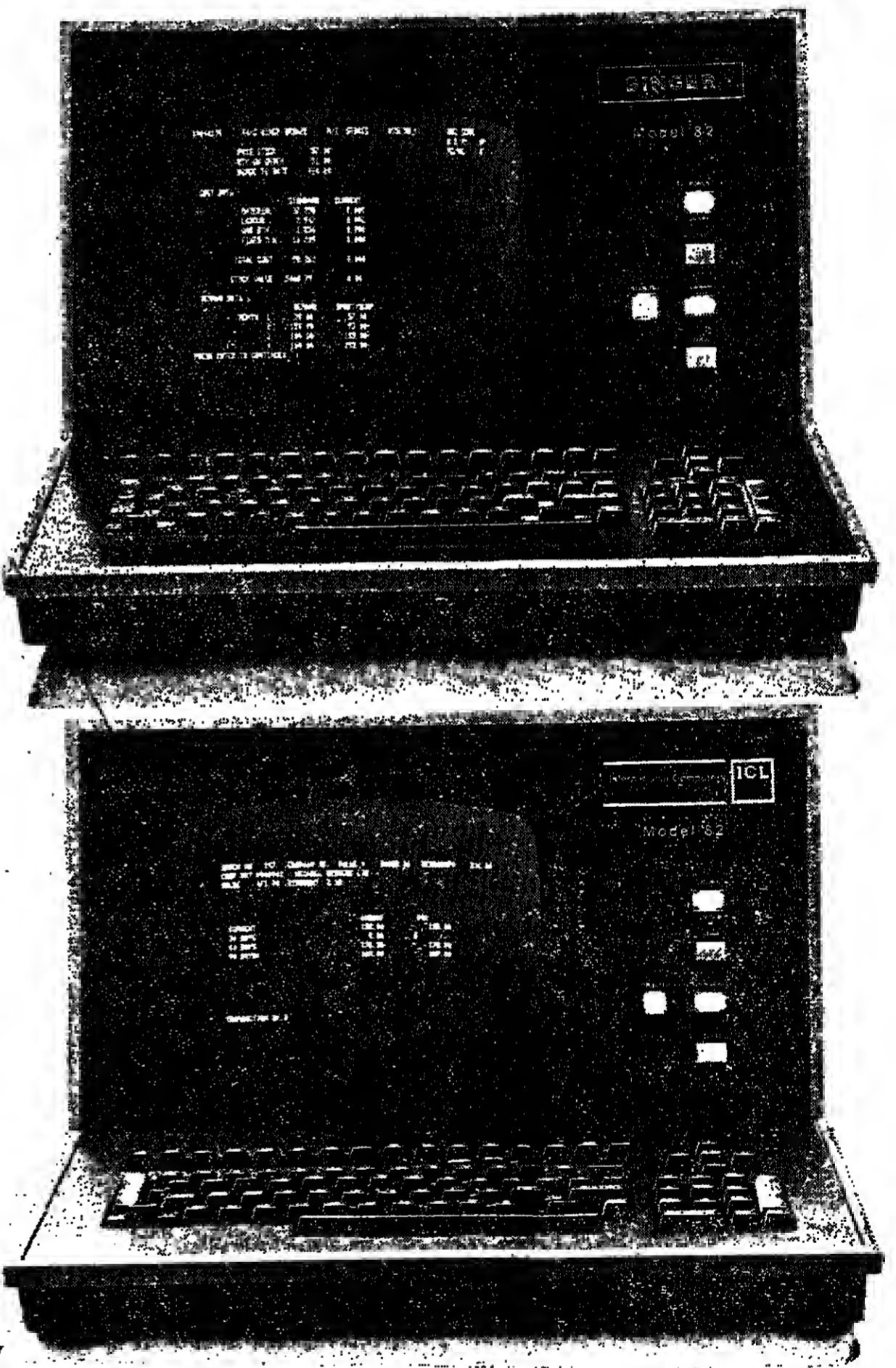
ments about mergers and... prerogative of the Europeans... Japanese aid. Some of the largest... U.S. manufacturers are pursuing a... similar course of survival. While... through Amdahl—have... considered considerable publicity, Univac and especially Honeywell... it will be at least three... before we know whether... drive will be successful, and... CDC have gone their... own the U.S. point of view, and... individualisation. Burroughs... towards... tests Honeywell's maxim that a... firm needs over 10 per cent... of the world market if it is to have... a secure future. This is of some... consolation to the Europeans, though... none of them shares Burroughs'... asset of a massive home market in... specialised sectors.

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Dataproducts advertisement with logo and text: 'Dataproducts the industry's best friend'. Lists products like printers, core memories, and sales offices in Dublin, Austria, France, Italy, U.K., and U.S.A.



# THE COMPUTER INDUSTRY VI

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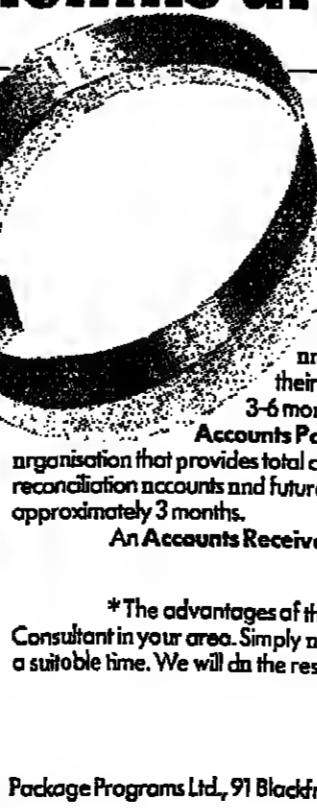
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# Users keep a close watch

THE BIG pressures on computing's effects on society are coming from the users of computers, the auditors, the British Computing Society representing the individual professionals at end last, but not least, the public.

All of these groups serve as some kind of sorely needed watch-dog on the headlong dash to computerisation which still shows little sign of slowdown.

About ten years ago the operating systems problems of computing were severe. The parts of software which actually run the data processing plant itself. The power of big computers was such that making the best use of this power demanded programmes to organise the running of applications programmes. The problems were huge. Some operating systems for large machines have soaked up as much as half the raw power of the processor. Improved ones still burn up 20 to 30 per cent of the power of a large machine in "red-tape" activities.

But the worst of the operating system problem is thought to be behind the technicians and the very success of large computing centres now needs to be balanced against their economic usefulness and social effects.

Anthony Chandor, development director of the National Computing Centre, notes that the users are now putting pressures on for standards. "A number of factors have brought about this important change of attitude," he says. "A few years ago the user waited for manufacturers of computers to sort out. Now they are demanding that attention is paid to their interests. They clearly realise the sensitivity of their business to computing reliability, cost-effectiveness and evolutionary progress."

The increasing interest in the portability of software from one maker's range to another's is directly founded on these economic concerns. This interest raises fundamental points about machine design and system design which users are studying because of their relevance to suppliers' choice in future years.

This switch from short-term obsessions could not have come at a more opportune moment. The public are tired of inflexible computer systems which seem to prevent many simple changes being made in the commercial practice of a business or the social administration of a government service.

It has been the more informed user that has spotted the emergence of database techniques as one way out of the old style inflexible computer system. With a good database system the change to applications programs can be dealt with more quickly and at lower cost than in conventional "split" files where a new use of data might mean a full file creation system as well as new applications programs using data which was already in the system spread across a number of existing files.

Databases enable the pooling of files and so create better options for changing systems. However, the users have also spotted the rudimentary nature of much database support techniques. Rather than jump out of the frying pan into the fire they are demanding progress from the suppliers of databases. These need to be more reliable, better designed, less failure prone and more tunable to keep the costs of running them within bounds.

As a consequence of database

developments there is also professional interest from BCS members in the cost-effective design of databases covering not only privacy questions and security matters but the plain usefulness of data extracted from a database. The temptation to proliferate data because it might one day answer some important question is being weighed against the support this data gives to regular management decision making. The weak notions are being weeded out.

Supporting the sceptics in computing containment are the auditors. The auditing of businesses using computing at the heart of their transactions and policy making is now taken very seriously indeed by all the major firms of accountants.

The whole environment of computing has come through the danger of being declared a technical failure and is now being judged against conventional and pertinent asset management criteria. Users are also becoming aware of impending government intervention in technical and social matters impinging on computing.

The EEC Commission's interest in various technical computing strategies is spotlighting the potential importance of decisions made between collections of governments and their associated telecommunications arms. There is little doubt that these influences are now as important to planners of both business and governmental computing as the policies of IBM or other major suppliers.

The professional members of the British Computer Society have reacted strongly to the swift changes in status of computing—from a threatened technical failure to a social and business milestone threat based on an overwhelming technical blitzkrieg. Although the basic BCS code of conduct seems simple, it is supported by a detailed code of practice which is currently undergoing a complete review. The insistence on codes is not confined to the professional side of computing. The Computing Services Association also operates a code of business practice for its members which is called to adjudicate when complaints are lodged. The facts are that these codes are used to remind computing firms and professionals of their responsibilities. These pressures feed back to the

user who becomes more aware of the pressure that is appropriate to put on suppliers' staff performance.

Large scale Government supported projects also now show thoughtful analysis from private businesses in sectors of computing and BCS and consumers' bodies. Viewdata—the Post Office retrieval service using a computer linked to adapted television receivers—is a service which has raised many questions.

The principle of Viewdata seems innocent enough. To encourage the public and business user to put more revenue in the P.O. investment in a simple information retrieval service is built. The service is aimed being limited but cheap. It is a two-way service in that user talks back to the computer when searching through a file of information.

Selection However, even the process which the selection of data to be stored is made is a public issue of no mean importance. A particular entertainment might feel censored, for instance, if left out of the Viewdata files. On business the damage done by exclusion might be much more serious. There may be a call here Viewdata files, on business rather than the TTV companies through the Independent Broadcasting Authority. The commercial computer bureaux are aware that the basic structure of Viewdata means that it will be yet another competitor in certain business sectors.

The PO crops up among computer users, professionals, the public affected by computers as a continual source of concern. The facilities tariffs boost or suppress styles of computing and security of telecommunications affects the security of computing projects. Add to this the Viewdata proposal public publishing using monopoly advantage point may inhibit the free through conventional publishing of non-Viewdata matter—creaming off the most profitable sets of public data. All in all, the monitoring the PO is the one certainty which all parties are dogging agree on.

Hedley V.

# Bureau attitudes

THE ANNOUNCEMENT by Centre-File, the computer bureau subsidiary of the National Westminster Bank, during the last few months that it had become part of a European "pool" of computing resources marked an important change in bureau attitudes. There has been a gradual realisation among computing bureau operators that some of the major contracts which could be handed depended on the ability to carry out certain services on a continent-wide basis.

The crude fact is that quite a slice of potential business has already been lost to the U.S.-based bureaux which created the first international network links. These links have concentrated

on the U.S. multinational firms as clients and on the transatlantic aspects of computing. However, as these networks came to cover most of the EEC countries and some outside the EEC it seemed that not only U.S.-based multinationals were exploiting the service but international firms based in Europe.

The Centre-File move is but one of a series from bureau members of the Computing Services Association to execute profitable alternatives to the U.S.-based network operators. The largest independent service bureaux and software firm in combination in the U.K. is the Computer Management Group. CMG already operates in the U.K., Belgium, Netherlands and Germany and will be in France before long.

One of the founders of CMG, Bryan Mills, has said that the multinational service firm within Europe has a special rationale. He claims that there are special sectors of the market which can be exploited by adding up business in a number of countries but which no single country operator would find profitable.

## Multinational

Most multinational firms working in computing services find life slightly complicated by the fact that Europe has both taxation and exchange controls working between countries which do not recognise the importance of the growing European multinational. Mills says "the fear of the U.S.-based multinational is so ingrained in Europe that too little thought is being given to a proper encouragement of local competitive operations."

However, the CMG operations flourish and product development is taking place in the firm belief that an example of profitable business is the best way to impress both local European Governments and the EEC rule makers.

The Davey computing services division has successfully licensed the use of its pipework design package across both Europe and the U.S. The lesson to be learnt from this very successful exporting of native skills is that determination and stability are needed if overseas confidence is to be won. The

CONTINUED ON NEXT PAGE

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معلومات الاصل



# THE COMPUTER INDUSTRY VII

## Shops begin to cash in

UTERS ARE already a supporters within the super-market industry as a development for many of the more sophisticated retailers. Supermarkets, like Sainsbury, together with some bigger wholesaling groups, Jifood and Wbateshead, already have extensive installations while some mail order companies, Littlewoods, have made substantial investments in computers.

As long ago as 1964, the little Neddly for distribution started discussing the idea, but it was not until 10 years later, when the McKinsey report was published, that its feasibility was demonstrated with any real conviction. While the McKinsey report was not itself a very optimistic one, it did conclude that the system could provide the grocery industry with a net gain of around £13m. a year after it had been in operation for five years.

until British shoppers see the electronic scanner-assisted checkout as they likely see that computers could shopping easier. Under the system, checkout operators have nothing to do but that products were positioned against a net cost of around £12.5m. On the face of this report, the food manufacturers, who would have to print the code on their products, had rather less to gain. The net "hard and soft" savings in Year Five were seen as being between zero and £500,000, even if such checkouts were queues in supermarkets, consumers may need to pay for this new device. Since then, evidence from the States has suggested that the cost to the manufacturer might not be as great as forecast. Their products should be up by the consumer greater.

In the States, where the McKinsey's carried out a similar survey for the industry, the savings were seen primarily in terms of staff but here the over 10 years. Pre-supporters of the system tend to put the stress on inventory cost savings, and benefits to be derived from greater information about sales. This stress may be partly for the benefit of the British unions but in America, many checkouts are manned by two operators as against only one in England.

### Savings

The total savings for the retailer in Year Five, both in terms of "hard" gains like staff savings and "soft" savings like a theoretical increase in customer traffic, would be £33m. as against a net cost of around £12.5m. On the face of this report, the food manufacturers, who would have to print the code on their products, had rather less to gain. The net "hard and soft" savings in Year Five were seen as being between zero and £500,000, even if such checkouts were queues in supermarkets, consumers may need to pay for this new device. Since then, evidence from the States has suggested that the cost to the manufacturer might not be as great as forecast. Their products should be up by the consumer greater.



Computerised checkouts, like this laser scanning terminal in a Danish supermarket, are gaining popularity in Europe.

believes there is no real commercial advantage in installing a computer-assisted checkout until around 70 per cent of the products sold are carrying the symbol so there is unlikely to be any rush to buy the front-end equipment until about 1980. British retailers are likely to follow the example of the American distribution groups and install the new checkouts in a few isolated stores on an experimental basis before making any major commitment to the new system. It could, therefore, be at least another two years before the new checkouts are installed on a wide scale. The time scale could be dragged out further both by the reluctance of retailers to make the kind of financial investment involved and also, perhaps, by delays in getting equipment as, though all the major computer manufacturers, like ICL, NCR and Sperry Rand, are interested in this field, they would be unlikely to build up vast stocks for the British market before the retailers had indicated some real interest.

Given the pressure on both manufacturing and retailing profits, it is not very surprising that there have been reservations about the new technology. Certainly, many companies see the system as a potential cost saver but however attractive these savings may be in the long term, the immediate problem is finding the money to invest in the new equipment. And as long as one retailer is not getting the edge on his competitors by exploiting these savings, the temptation is to put off spending the money. The first move has to come from the manufacturers. In the past they have tended to see the system as having less in it for them than the retailers. But the ANA has the support of major grocery companies like Heinz and Beechams and the Association argues that, as labels have to be changed regularly anyway, the additional costs are minimal and have to be seen in the context of the savings in inventory costs, which a system which allows companies to know exactly what is being sold, and when, could provide.

### Grocery

Not only does the system have the potential to speed up transaction at the checkout and minimise errors by automatically translating the bar code into the retail price, it could also transmit information on sales direct from checkout to the in-store computer and so on to the group's central computer. This information could then be relayed overnight to the manufacturer. Communications between supplier and customer

## Attitudes

CONTINUED FROM PREVIOUS PAGE

future product development of Dsvey in graphics applications has been assured through the flow of royalty payments from computing at all. Rather it is licensed operators such as Aquitaine in Paris and IBM in Brussels.

Devey has also had success in both Yugoslavia and Poland and its executives view Eastern Europe as a perfectly sensible market to be in provided that contracts can be drawn up to satisfy the special currency factors involved.

Another bureau which has a high technical content in its computing base, and which has gone overseas is Atkins Computing Services. The interesting part of the Dutch branch of Atkins is that it has not found its main markets by merely following its multinational technical clients across the North Sea. Rather the Atkins skill has been to gain from the fact that the going rates for bureau work are much higher on the Continent than in the U.K.

On the other hand a market can be found in Europe for specifically British services. Datastream is a well-known British city-aimed service for financial data which is finding a growing client base on the Continent. The BOC Datasolve involvement in Datastream rests on a 30 per cent stake and the managerial role in its operations.

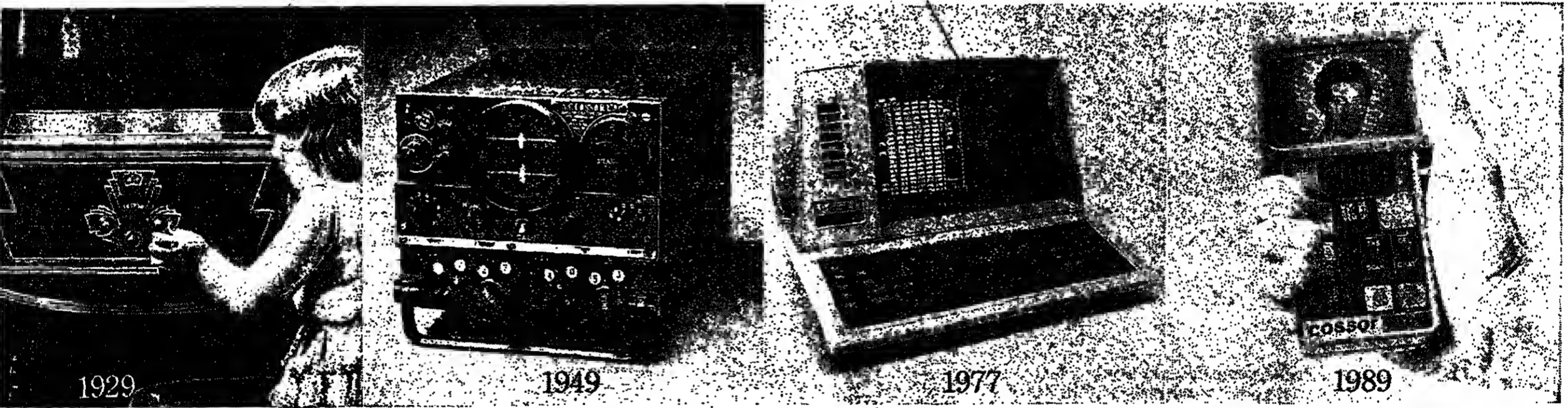
The BOC executives examining their European gains over the recent period have noticed that apart from the Datastream success there has been a useful boom in operating skills to be exported and special system software knowledge. The necessity of exporting bulk computing to the Continent seems to be limited in their view by the performance and tariffs of telecommunications links.

The U.S.-based bureaux still seem to have much of the telecommunications-based computing networks in Europe wrapped up in their hands and there is still plenty of competing space left between them for these types of operators to grow in the future. Part of the caution exercising the minds of U.K. bureau operators concerns the way that European governments are viewing growth in pan-European computing. The outstanding project in the Euro-field is obviously Euronet.

The U.K. Government has appeared in the Euronet act by forming Info-Line to explore the existing retrieval services in the new on-line computer based forms. Commercial bureaux are active in the information retrieval field and Ranks Hovis McDougall's subsidiary in computing has a deal with the British Library on just such on-line retrieval services using its skill as an IBM bureau operator and telecommunications experience using ICL terminal computers to provide experience of mixed equipment working in this field. For now, the U.K. bureaux are afraid that governments may box them in from competing with the experience of the U.S. bureaux over networks serving all types of computing. Since the tariffs for telecommunications costs are fixed by Governments' influence throughout Europe there is only a limited amount of skill that can be brought to bear here to justify a special bureau offering of services. In the ordinary run of business the British bureaux live by being very skilled operators and they would very much like to teach governments a thing or two in Europe about cost-effectiveness. However, they are unsure they will get the opportunity.

Elinor Goodman

Hedley Voysey



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THE COMPUTER INDUSTRY VIII

# Dividends for the banks

**PAPER AND PEOPLE** are expensive to handle and, although they are unlikely to admit it, the major clearing banks would like to do away with both.

A simplification? Of course. But consider the facts. Moving large volumes of paper about is costly, labour-intensive and consumes a great deal of energy. That is why postal services make a loss. But transmitting information electronically is inexpensive, is not labour-intensive and consumes relatively little energy. That is why telecommunications is booming and will continue to boom.

Extend this argument to the world of banking and it is apparent that the cheque, which is after all only a means of conveying information, with no intrinsic worth of its own, is an inefficient instrument for transferring money from A to B, particularly when all the encoding, reading, sorting and handling operations to which it is subjected, are taken into account.

It is not cheques alone which clog up the works. People are a nuisance, too. They expect branch banks to be located on their doorstep, they congregate en masse during lunch hours, queueing at every available counter position to make withdrawals and deposits, adding to the flood of paper work and monopolising the time of the cashiers.

In fact, for the majority of transactions there is no pressing reason for customers to commune with cashiers. A

variety of terminals and cash dispensers is available to handle most types of transaction, and even deposits can be performed automatically, although there is reason to believe that customers are far more reluctant to hand money over to a terminal than to accept money from one.

Be that as it may, customer-operated terminals, the introduction of a multi-purpose magnetically encoded bank card, hooking retailers' terminals into banking networks and direct on-line debiting of customers' accounts are all developments which are features of the EFTS—Electronic Funds Transfer Systems—which will revolutionise the banking scene within the next ten years.

## Activity

So far, the main computing activity in the highly centralised U.K. banking field has been the establishment of networks to enable current account information to be passed from branch banks to large computer centres for processing and automation of the cheque-handling function. With more than five million cheques being cleared each day from their own business, the "Big Four" clearing banks have already achieved substantial savings, not least through the establishment of their own inter-bank computer bureau—BACS—Bankers Automated Clearing Services.

However, in any situation where vast masses of paper—be they cheques or credit card sales

vouchers—have to be physically transported, encoded, sorted and processed, operating costs are high and the overall system must be regarded as inherently inefficient compared with the electronic alternatives.

One has only to look at the situation in the U.S. where cheques, more than half of them for amounts of less than \$50 are being written at the rate of over 30,000m. a year, to realise that this gigantic paperchase cannot go on. Estimates that it costs a bank nearly 20 cents to process a single cheque drive home the message that the cheque's days are numbered.

But what will we put in its place? It is evident that only paperless systems will be acceptable, or indeed, economically viable, and it is thus not so much a question of whether electronic funds transfer systems will become a reality, as when this will happen and what services they will provide.

What seems clear is that many of the features which we attribute to EFTS will be incorporated in banking systems over the next ten years and that although the cheque will certainly not disappear overnight, there will be a decline in the use of paper instruments to transfer funds, as the scope of EFTS widens.

A key element in this transition will be the introduction of a multi-purpose card, similar to an ordinary credit card, but magnetically encoded with information relating to the holder, his current account balance, his

credit limit and so on.

Such a card will be used as a conventional credit card, to activate cash dispensers, to obtain account information and, eventually, used in conjunction with a retailer's terminal, as authorisation for direct debiting of the card-holder's current account. It will be appreciated that we have a long way to go before the last of these services will be provided. Standards will have to be agreed as to the data format of the multi-purpose card and the techniques to be adopted in encoding and reading it. Telecommunications standards and protocols will have to be generally accepted if terminals at retail outlets are to be linked directly to banking networks.

This also raises the question whether the banks will each maintain separate networks or whether a "national banking network" will be formed by linking the existing networks together. Point-of-sale terminals at retail outlets could be linked into such a network with the minimum of expense and upheaval, but it might be thought that permitting large numbers of terminals to access all the bank's systems would constitute something of a security risk.

An alternative, albeit a more expensive one, would be for the banks to set up an entirely separate point-of-sale network, a good deal of the running with not involving their own net-

works at all, in which all the data required for payment and credit authorisation, would be stored. This would avoid the problems and consequences of linking the bank's networks together but would entail the setting up and operation of a separate network and a common on-line database in parallel with their own systems.

However, such a development is no more than a subject for speculation at present and of more immediate consequence is the question whether the British clearing banks are really grasping the opportunities to achieve economies and improve efficiency which EFTS undoubtedly presents.

## Answer

The answer is that the Big Four all have working parties or departments which are investigating the whole question of EFTS, and that some progress has already been made towards the adoption of a standard for magnetically encoded cards.

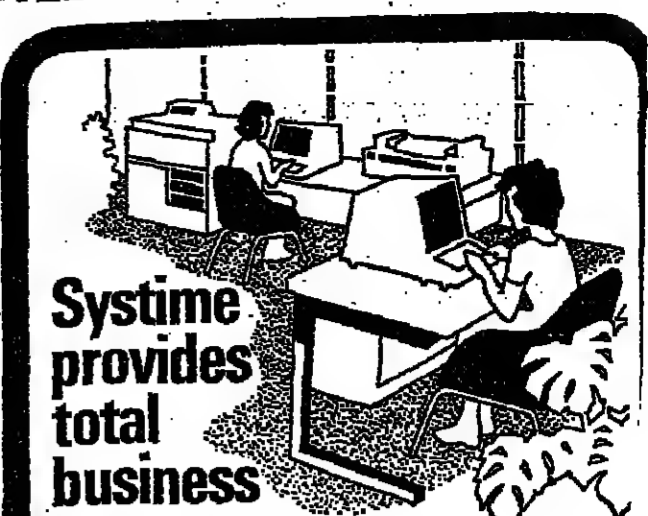
At an individual level the banks are all experimenting to varying degrees, with terminals which provide more facilities for cashiers or which are capable of customer operation as cash dispensers are now. In this field Lloyds has made a good deal of the running with more than 600 IBM Cashpoint

terminals installed at 300 branches and 30 outside locations throughout England and Wales. However, Barclays and National Westminster have both ordered NCR 770 on-line terminals which are capable of performing a wide range of functions including deposits, transfers and re-ordering cheque books, as well as acting as a cash dispenser.

And the Midland Bank, which is taking a very positive line in its approach to EFTS, has carried out an experiment at its Canterbury branch to evaluate the effectiveness of EFTS techniques. At this branch all carried out an experiment at its with Burrengths TD700 terminals for recording debits and credits as well as calculating currency conversions and handling enquiries.

Details of customer transactions are transmitted directly to the bank's computer centre at Brent in North London. The scheme which is to be extended to other branches of the bank and expanded to include plastic card readers, has reduced the time involved in cashiers' end-of-day tasks by three-quarters of an hour, has speeded up customer enquiries, improved counter service and reduced paper work. All in all an encouraging forerunner of the benefits which EFTS will bring.

Christopher Hipwell



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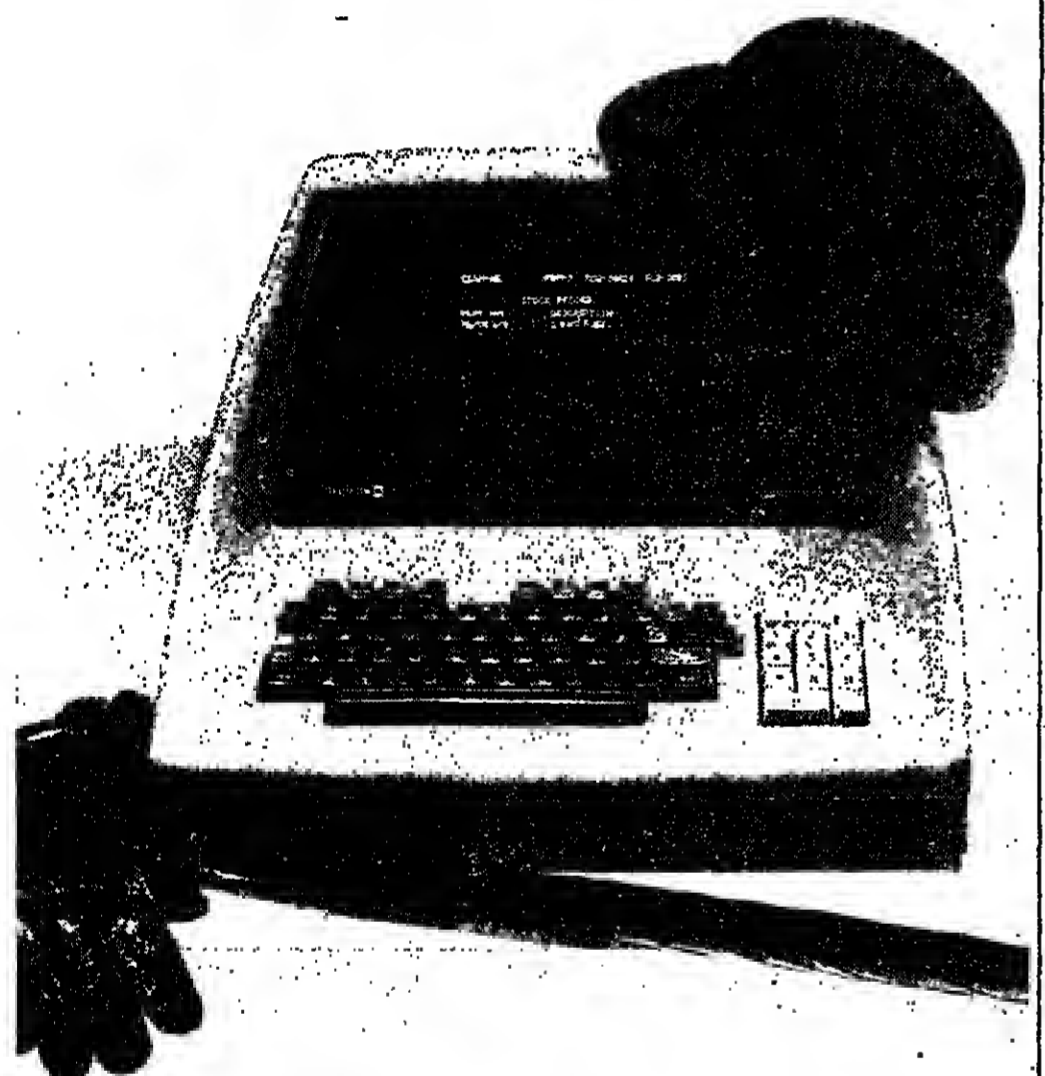
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# Security and privacy

SAY "PRIVACY" to a computer user and he is likely to throw up his hands in horror at the prospect of the effort and expense which the word conjures up for him. Say "security" and he may look worried, but at least he is likely to admit that it is necessary.

Those differing reactions are instructive, for, despite a great deal of loose talk, they do indicate that in this grey area, roughly delineated by the words computers / privacy / security, where high ideals, high technology and high costs overlap, the two issues of privacy and security are each perceived in a different light.

That at least marks a slight advance, for talking about privacy and security in the same breath has been of little benefit to either. The two are certainly not synonymous and as a general premise it may be said that the concept of privacy is intended to safeguard the individual, and that of security to safeguard data.

While effective security is essential if the privacy of the individual is to be upheld, security is not, in itself, any guarantee of privacy. Although the organisation which is holding personal data may safeguard it from loss, distortion or misuse by outsiders thus, on the face of it, ensuring the security of that data, that does not mean the organisation itself will not use the data in ways which may adversely affect the privacy of the individual.

This may seem self-evident but at the time when public debate and public pronouncements on privacy and security are virtually a daily occurrence, it is as well to bear these distinctions in mind. Indeed opinions are emerging—and hardening—after a long period of inactivity and complacency.

The issue of computers and privacy has been a matter for public debate in the U.K. at least since 1970, when a major two-day conference was devoted to the subject. After that little happened although the appoint-

ment of the Younger Committee of its report in 1972 did stimulate further interest in the subject.

However, the catalyst which is undoubtedly responsible for changing attitudes and growing awareness of privacy on the part of computer users, is the White Paper on Computers and Privacy published in December, 1975.

This provided for the setting up of a Data Protection Committee to gather information from interested parties and to examine the form which legislation on computers and privacy should take.

## Safeguards

Certain of these safeguards will undoubtedly be expensive to implement and, not unexpectedly, it is the cost of complying with these probable features of future legislation that has proved to be the main area of contention when organisations like the British Computer Society, the Local Authorities Management Services and Computer Committee (LAMSAC) and the Data Processing Management Association, have made their submissions to the Data Protection Committee.

For example, commenting on the proposals that "the operator of the system should be responsible for ensuring its accuracy and relevance and the subject of the information should be able to satisfy himself about this, which in many cases will best be achieved by giving him the opportunity to see it, check it and, if necessary, have it corrected" the BCS contends that responsibility for accuracy and rele-

vance should be limited to "what is reasonable in terms of cost and effort."

On supplying information to the person to whom it applies, the BCS cites a medical system in the U.S., which currently costs \$4m. a year, to operate and which, it is estimated, would incur additional costs of \$700,000 if a "data accuracy inquiry" requirement were to be imposed.

Similarly, to the objective stated in the White Paper that "the subject should also be able to find out what has been done with the information and to whom it has been given," LAMSAC retorts that "if this detail is identified in every detail, it will seriously inhibit the use of computers to process personal information. The possible consequences of this simple, well-intentioned statement are enormous in terms of inconvenience and cost."

Indeed, in a general comment on the subject of the costs of privacy, LAMSAC is particularly forthright: "There must be no misunderstanding by the Data Protection Committee of the enormous costs which could be involved in implementing regulations having idealistic rather than practical origins, to protect the privacy of personal information," it asserts.

This view is by no means limited to LAMSAC and it is undoubtedly true to say that there is widespread concern among computer users at the prospect of incurring substantial costs in order to meet statutory obligations which could be brought in to ensure the accuracy of information and to supply it, in print-out form to the person to whom it applies.

But, disturbingly, such costs associated with meeting specific statutory obligations could prove to be little more than the tip of the iceberg. For if more general regulations relating to the security of personal information held in com-

CONTINUED ON NEXT PAGE



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# THE COMPUTER INDUSTRY IX

## Education and training

PROPHECY that can be made about the decade is that our economic will depend to a considerable extent upon the skill which we exploit computer. The pressures that have the use of computers more and more British, government and professional organisations during a few years are intensifying—most notably, the rising cost of labouring added.

crucial factor in the effectiveness with which we can meet challenge in the short term quality and quantity of education we provide for our managers, administrators and professional people. of any real value, this recognises that computing is no longer an esoteric art practised only by technicians; laymen stand reverently on the sidelines, but a tool for personal use as an aid to day control, the exploration of new ideas and the assessment of future opportunities.

therefore dismaying to at, on the whole, to-day's education in computing is miserably inadequate. The view of John Harris, manager of ICL Education Region, is that we are breeding a generation that is largely ignorant of the use of computers. He says, "The use of computers is used as an aid to the study of management subjects. In Britain, the proportion is probably 5 per cent."

often, says Harris, the business graduate's knowledge of computing begins with a short appreciation course and a few hours' study of programming in English at a terminal. This superficial approach does more harm than good

for it may, in Harris's opinion, suggest that the subject itself (as distinct from the end-user's view of it) is simple. Another person who has found computer education for managers ludicrously inadequate as a rule is Patrick Raymont, Head of Training and Advisory Services at the National Computing Centre.

To the hope of helping to plug this dangerous gap, the NCC has begun work on a scheme it has called the Plus Project. The aim is to produce a series of audiovisual aids which, Raymont hopes, will be particularly valuable for organisations who find it hard to spare managers for attendance at courses but could arrange in-house education sessions. He envisages that the aids will fulfil the needs of two main groups.

**Abreast**

One series will be designed to help technical people keep abreast of new developments. The other will be aimed at such people as managers in manufacturing industries and, perhaps, companies who are not yet computer users, who need to be convinced not only of the value of computers but of the nature of the contribution they can make in specific areas.

One possibility the NCC is considering in this connection is the setting up of a subscription service which would function in much the same way as a book club. This approach has already been adopted by another organisation for dissemination of information on the legal requirements arising from new legislation.

How soon the individual business engineer, doctor, accountant, solicitor and other professional will regard computer power as indispensable will depend, the NCC believes, on ease of use (which in turn is largely dependent on the power of software). This aspect of computing ranks

high among the priorities of every major mainframe computer manufacturer to-day and, increasingly, of those who supply or market smaller systems as hardware-software packages.

Ease of use was, for instance one of the subjects selected for detailed discussion in the recent Showcase seminar mounted by IBM in London for management consultants and the Press. Filmed demonstrations showed how easily a financial, personnel or marketing manager without computer knowledge can write, on a visual display terminal, a program of a few lines in near-English to extract from a database any ad hoc permutation of information.

Admittedly, even the widely used "tutorial mode" which takes a terminal user step by step through the procedures needed for, say, information retrieval, is a far cry from the totally natural man-machine communication which is the ultimate goal. How long will elapse before voice communication with the computer is a commercial possibility, however, is anyone's guess.

But how real an obstacle is this lack of natural man-computer communication? It certainly has not impeded the widespread use of electronic calculators, and very soon micro-computers with a range of sophisticated software will be available at prices little higher than we pay to-day for the more elaborate calculators. Are these to go unused?

J. V. Mulder, a runner up in a recent competition for an essay on Software in the Nineties sponsored by Computer Weekly and the software house, Dataskil, believes that fear of the computer is at present a big stumbling block. "To the man in the street, software (meaning applied computer power) may have appeared as Big Brother's best weapon. The mainframe... has demanded tribute of its attendants in the form of more security... above all, against the enemy number one—human error. Any incompetence or even temporary lapse of a human being... and the monster is threatened. To call such a demanding and unreasonable master an obedient slave is stretching the truth more than somewhat. The big mainframe has tended to exaggerate the totalitarian aspects of an organisation, causing over-centralisation and diminished scope for human discrimination. But the worse feature of third generation (existing) software is that it imposes too high a price on

change, on continuous and radical, not to say experimental, developments."

The software of the future, Mr. Mulder believes, must encourage the user to experiment, be interactive, fluid and responsive—which unerringly leads back to the subject of education and training.

Who will write the software that will, by making the computer truly a servant, enhance its intrinsic value for the consumer and attract those who currently find it repellent? The starting point is, of course, in the schools and here in Britain, though doing better than most other European countries with about half its secondary schools offering some form of computer education, still has far to go.

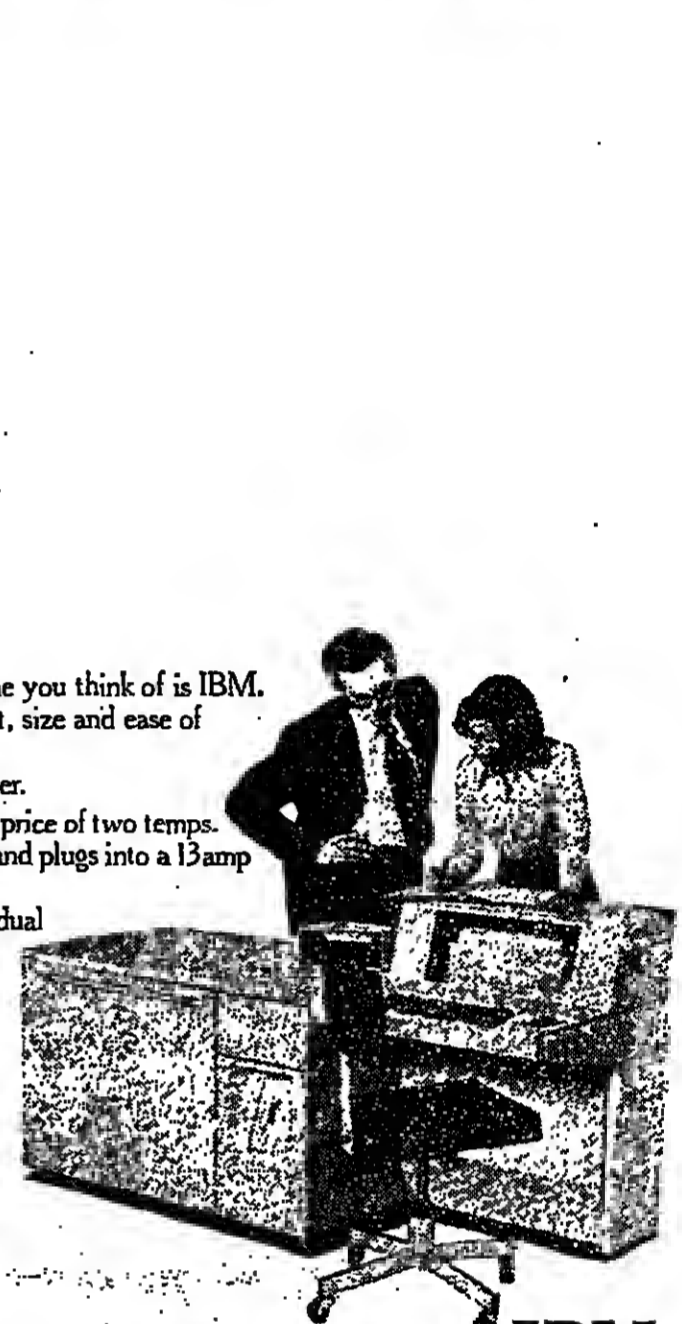
John Harris of ICL (which as a company issues many school books which relate computing directly to the known realities of daily life) believes this could be greatly improved at modest cost. All centres of higher education, he argues, could and should plan, when installing their computers, to provide a service to local schools. This should include not only use of hardware and software but frequent and close liaison between teachers at both levels of the establishment.

**Fruitful**

Though the chances are that a child who has received early and enlightened instruction on computing will probably become a fruitful user, this does not, of course, necessarily imply that the required skills for writing software will be available. Here, however, a hopeful note is struck by Patrick Raymont of the NCC who has found no shortage of suitable skills. One reason for this is that the criteria for success in the technical aspects of computing have changed and broadened during recent years. This, plus the fact that the traditional type of aptitude tests that were too often used as the major factor in selection have been discredited and are being replaced by more accurate tools, has meant the net is cast more widely. Further possibilities are opened up by the interesting discovery by NCC, through its Threshold scheme for unemployed school-leavers, that a significant number of these who by conventional standards are academic failures are found by a battery of NCC-designed tests to possess suitable skills for computer work.

Laura Tatham

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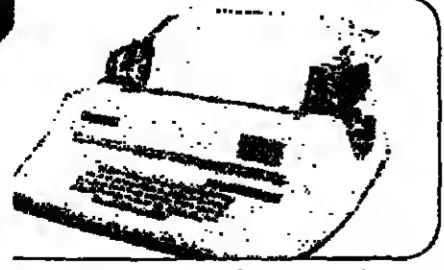
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## Security

CONTINUED FROM PREVIOUS PAGE

computers were to be imposed the sky would indeed be the limit, as far as costs are concerned.

Security, in the computer sense, is not just a matter of personnel policies and physical precautions—stopping disenchanted employees from stealing the computer tapes. It also embraces a host of technical factors such as operating systems, access controls, communications and data encryption all of which have a bearing on the overall security of a specific system.

A seminar entitled "Policy issues in data protection and privacy," held by the OECD, looked at these aspects of the security problem and a particularly thought-provoking paper by Rein Turn of the Rand Corporation examined the requirements which legislative proposals concerning computers and privacy are placing on the computer user.

Analysing the considerations associated with the design of secure systems, Mr. Turn identified the cost areas which must be taken into account in setting up preventive systems as analysis and specification of security requirements, capital expenditure for physical security in the computer room, analysing the vulnerability of operating systems and implementing security-oriented software, design and coding of software for access control management, password generation, user identification, data encryption and audit trail recording.

They also included validation and testing of security-related systems software, operating systems, and access control routines, design and implementation of security regulations for data handling, programming and back-up and recovery procedures and reformatting of existing files to include security-oriented data fields.

Even more daunting than designing and setting up a security-oriented system are the costs which are likely to be incurred in operating it. Mr. Turn asserts that "typical estimates are that access control features tend to increase the overall processing time by 5 to 10 per cent, the operating system size by 10 per cent, and the main memory requirements of the operating system by 10 to 20 per cent."

Furthermore, concealing information in files by means of encryption procedures can increase processing time by anything from 168 per cent. to 800 per cent., depending on the technique used. Considering the scale of these costs, it might be thought that computer users would have thoroughly investigated the additional expenditure which security imposes. In fact, this does not, in general, seem to have been the case.

A report published by the National Computing Centre in 1974 entitled "Where next for Computer Security" showed that of 150 responsible executives at computer installations, the majority, when first polled, were quite satisfied that their establishment was adequately protected from all likely risks—a view which was swiftly modified after some probing by the NCC's investigators.

Now, awareness of the importance of security is certainly more widespread but it may be doubted whether much work has been done on estimating the associated costs.

All in all it would seem that any statutory obligation to impose high standards of security and privacy could lead to a potentially explosive situation in terms of the costs to be borne by computer users. However, a crumb of comfort can perhaps be gained from the view of an official of the U.S. Bureau of Standards (but "there is a tendency to forgo privacy as the cost of that privacy increases."

Christopher Hipwell

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THE COMPUTER INDUSTRY X

# Aiding the engineer

A FEW days ago, Lloyd's Register approval was given, within the strict safety rules laid down by the Department of Energy, to a new design of platform—exploration or production—which may go a very long way towards solving the problems of escalating costs associated with big steel-jacketed or reinforced concrete rigs. But not a single piece of metal was cut nor had a physical model been subjected to simulated storms.

It is now becoming a commonplace that civil engineering consultants designing high-rise buildings and other structures for tremor-prone countries put their designs through rigorous earthquake tests before final blueprints are approved: again without physical model tests.

In both cases the "model" will exist in the form of a set of values and associated constraints retained in a computer memory and it will have been subjected to battering from hypothetical waves or to twisting by earthquake forces represented by a series of vectors applied at key points of the structures, considered as a series of simple shapes or finite elements.

Finite element analysis is an important weapon in the armoury of the modern structural engineer but it needs considerable skill on the part of the staff who put problems on to the computer, and a large computer at that, since the work can demand the manipulation of matrices of the order of 10,000 square.

It follows that few commercial organisations will contemplate with any joy a need for a new analysis program or system of programs since some of these systems have taken 100 man/years of mathematical computing to build and get right and also require constant effort to support and develop. Hence the appearance of a number of general systems offered by computer bureaux for shared use.

An example of facilities of this type can be found in the four general programs available at Scicon. Two are from the U.S., one from Norway and one from Britain. They are supported by some of the largest machines in commercial use, by close work with the originators and by constant exchanges with users—so the load is spread far more widely than in the case of self-developed systems. And this seems to be one of the areas where big is still beautiful since it would be very difficult if not impossible to harness a group of small machines to tackle such work.

## Weakness

The output of such analyses generally would show whether the design under study did or did not comply with codes, regulations and the engineering limitations of the materials it was proposed to use.

Any weaknesses in the design would be shown up immediately and it would be a case of "back to the drawing board."

But the drawing board could be, frequently now is, a display like a large TV screen on which lines and curves can be shown by command from a keyboard and key points can be moved around the screen (converging lines moving in concert) simply by touching them with a light pen and taking this across the screen to the new position.

This mode of operating has been made possible by advances in computers and particularly of the instructions, or software, which constrain them to operate in certain useful ways.

Harnessed in the way described above, the computer is assisting the design process, hence Computer Assisted Design, or CAD. First described as a possibility in Britain some 20 years ago, it was demonstrated publicly by Elliott-Automation about 12 years ago.

And because the prospect of a man-machine dialogue in which the computer would cull to the aid of the designer vast stores of information on materials performance and structural behaviour, while aiding him to project with economy and safety, it was so exciting that Britain set up a unique CAD Centre at Cambridge during the years of "white-hot technology."

Now, some seven years later and after the expenditure of approximately £20m., the CADC is still unique and has, quite rightly, survived an attempt to axe it on the grounds of Government economies.

The wealth of software and systems expertise accumulated over the years is hard to

evaluate in money terms. But there is hardly an industry which is not touched in some way by the design routines available at CADC and becoming locally available all over Britain through a number of bureau/centres. The STAR network now covers Scicon, SIA and NEL and the CADC at St. Helens as well as CADC Cambridge.

One of the most significant services the Centre has rendered computer-using industry at large is the work it has done to disseminate the Cino-F package which can be used on virtually any computer to produce a series of graphics (lines, arcs, etc.) and cause them to move around the display in a certain way—rotate, shift, abear, scale, etc.

When CAD is applied to mechanical engineering, once a part has been drawn to the designer's satisfaction, a tape can be produced which will drive numerically-controlled machine-tools which will make the part to specification.

GNC is the name of the Cambridge program to produce control tapes for milling machines, lathes, spark erosion machines, etc., and it will aid a designer to nest components on sheet metal for minimum waste.

Polysurf is another facility allowing control tapes to be made for complex 3D surfaces hitherto almost impossible to achieve by standard methods. CADC has recently perfected a detailed pipework layout procedure which is suitable for the largest processing complexes.

While engineers' ability to use large computers to speed design has now been demonstrated after years of hard work, the machine tool control unit manufacturers may be seeing the light at the end of at least as many years of rapid change.

This is because of the advent of the microprocessor which is making the automation of the machine tool much simpler to achieve for the control designer and far easier to apply for the user.

RUSC is the name of the control concept evolved by Plessey on a microprocessor basis. It is the outcome of the work done by the company's numerical control centre, firstly to merge its developments with those of AEI and Ferranti under the impulsion of the then Ministry of Technology, and secondly to look at equipment and methods in general use so as to design what world markets need.

## Maker

PNC is now Europe's largest numerical controls maker but it has to operate against fierce EEC company competition as well as the U.S. giants. In consequence, RUSC is getting timely Government support since to all intents and purposes it has leaptfrogged most of the competition. Coming in the form of a controller and an editor it will accept instructions from most types of input, including much larger computers, and should ultimately be available for virtually any machine tool and/or cutting operation at much lower cost than any pre-

vious form of automation, including minicomputers and dedicated controllers.

Many of the foregoing developments would be impossible or at the least far more expensive to achieve, without another form of CAD intended specifically to help electronics designers to achieve the complex drawings of integrated circuits quickly, without error and with maximum interconnection economy. Work on circuit design has been in progress in many centres for years and many years of effort have gone into the writing of the software needed to support the displays but also to produce the tapes which ultimately drive the plotters making the finalised artwork.

It is again a British company that has carried out pioneering work in this difficult area and Redac (Racal) software packages are being used all over the world for the fast and error-free layout of complicated multi-layer circuit boards.

In this particular area of modern technology, computing has probably come closer to an integrated whole than any other since users can conceive a design, try it out for validity under extreme conditions, amend it and then get down to detail work, providing as a by-product the instructions for the machines that will make the components. It is gratifying to national pride, if not yet to the national purse that many U.K. organisations and companies have a world lead in the field.

Ted Schoeters

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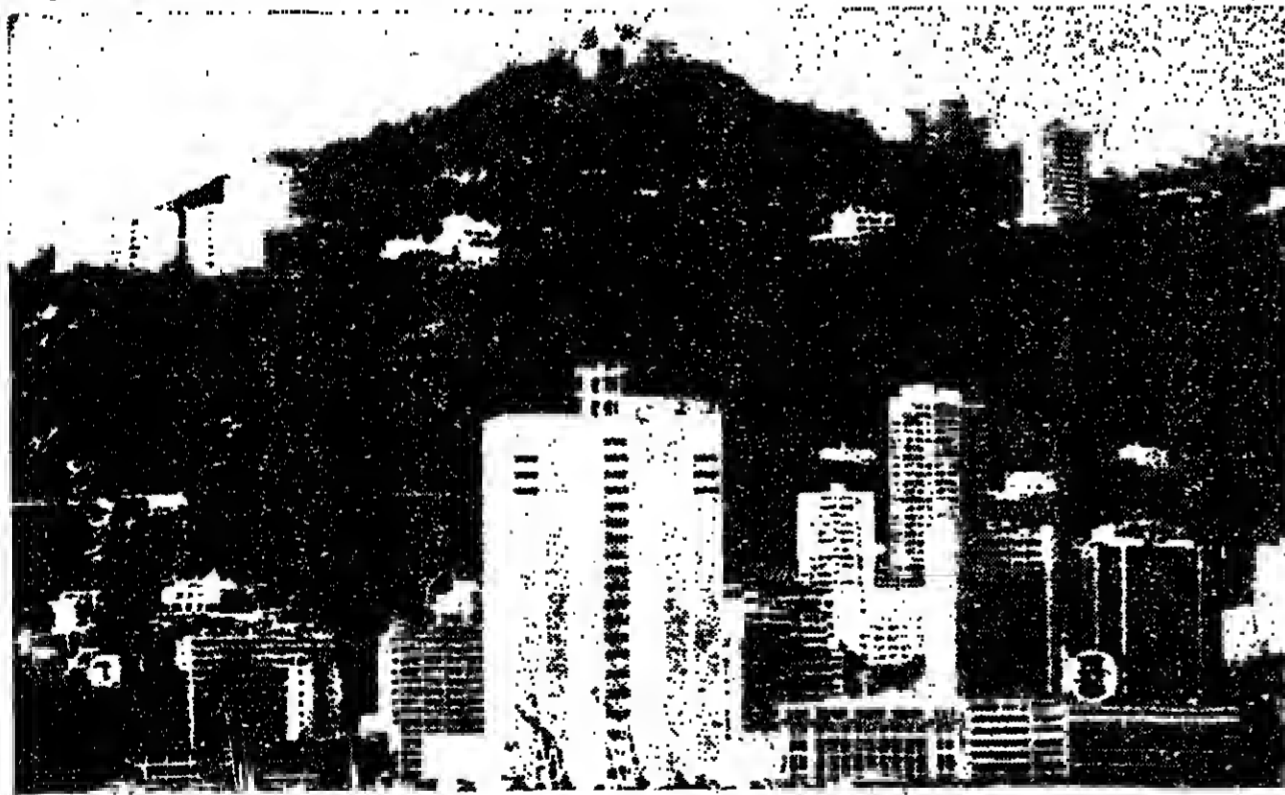
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CONTINUED ON NEXT PAGE

# Robot technology

ALTHOUGH BRITAIN for a decade and more led Europe in nuclear power developments, several British companies were involved in the design and manufacture of powered manipulators to handle, behind thick walls of concrete and leaded glass, materials too radioactive to approach, so one seems to have thought of the extra step towards developing an industrial robot to handle hot and heavy objects.

This is all the more surprising since—at the time of maximum demand for remote handlers—Ferranti's work on advanced machine-tool and coordinate measurement techniques was reaching its peak. For one reason or another there was not the necessary cross-fertilisation, or technology transfer, or perhaps manpower was too cheap, and even now U.K. industries that could benefit from the use of robot machine servants in dangerous or unpleasant operations are tending to lag well behind their Japanese counterparts.

This is an interesting sidelight on the fact that, in a large group of industries in Japan, including electronics, costs of production have crept up to be still around half while in the Philippines, electronic assembly work is not expected to cost more than one-tenth.

In Europe, Sweden's giant ASEA group is among the pioneers of robot development and already is making considerable use of own products in various areas including the company's casting shops. It has approached the work from the viewpoint of simplicity in use and has built the controller for its equipment around a microprocessor with a fair amount of memory. To set up a robot of this type, all a would-be user has to do is to take the head of the machine with its grippers through the sequence it will

## Robust

With ESAB, a world leader in welding techniques, ASEA has developed a version of its robots to handle high-class inert gas welding of steel components which have to withstand extremely severe treatment, such as the connector unit which goes between tractor and trailer on a juggernaut. Productivity is raised by an enormous factor and quality is very high.

Undoubtedly, however, the massive use made by Volvo, and other European car builders, of Unimate robots in spot welding and body framing has spurred ASEA interest. Unimation Inc. was set up 15 years ago in Danbury, Connecticut, holds 700 patents in robotics and has stalled 1,000 machines worldwide with 300 in Europe alone, while its U.K. operation moved to larger premises last year to cope with European demand which takes 90 per cent. of its throughput.

As demand expands, the company is adding to the options it can offer and has units with from two to six degrees of freedom to take the head and arm actions. Memory can be specified to allow the machines to carry out up to 1,024 separate

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# THE COMPUTER INDUSTRY XI

## Minis and micros

THAT it took the Government until 1966 to recognise the strategic importance of a national mainframe industry, and another two years for the British and French authorities to reach the conclusion, it is perhaps surprising that it took until 1970 for any European government to realise that there was to be a computer industry mainframe.

Again the French were first to see that while the mainframe industry was maturing, the microcomputer, peripherals and terminals sector was growing rapidly. Having decided that he had no alternative to sell out the artificially constructed national mainframe manufacturers, CII nevertheless in return for a French majority hold the industry minister d'Ornano turned his attention to the "peripherals" sector.

It had been formed by bringing together a number of French computer manufacturers, and unlike ICL in the UK which was specifically formed from the microcomputer market, CII inherited a scientific Data Systems of expertise developed in returning and marketing machine was soon applied to the most successful European general-purpose computer, the Mitra 15, which are now approaching 2,000 mark. (Datsasab den manufactures its D5 t a faster rate, but these es are almost all used in terminals, whereas 15s are used in the full of mini applications, anyom hospital automation educational systems in switching of data in ne networks and control refinery processes.)

ng ceded its mainframe to Honeywell, the Government had to do with this change-over on a production line successful product. The counterparts of GEC and are the two big electronic conglomerates it nd Thomson, which had brought out an Editor' onit which allows users to make fast, strongly favoured the minor positional changes to a well solution for CII sequence stored in memory. Thomson wanted the manufacturer to remain unit is actually working. dent. Thus when the Apart from welding work on y company in CII was car production lines, handling up, CGE ended up with castings and operating in con-

The German Government's awakening is almost certainly too late. Although Germany has Europe's largest office and small business computer company in Europe in the form of Nixdorf Computer, it now has only one general-purpose minimeaker, Dietz.

**Policy**

Despite government neglect, Britain has more minimeakers than any other European country. There is no "buy British" policy to bolster the minimeakers, and as a result only Ferranti, in the rather narrow field of process control, can be counted a real success. Britain has an almost exact counterpart to Dietz in Computer Technology, CTL, which makes large general-purpose mini-computers which have achieved considerable technological success, notably in the medical automation field. But in 1975-76, Computer Technology's turnover of about £4m. showed no growth at all, which meant that it fell even further behind its American competitors. The company is now profitable, however, and if there were any real enthusiasm for European co-operation, it would be logical to bring Computer Technology and Dietz together.

Both companies are following a rapidly-growing trend within the mini-computer market, that of building up small business computer systems around the general-purpose mini processor in competition with the office computers of Burroughs, NCR, Philips and Nixdorf. Computer Technology's new S800 series is aimed almost exclusively at the

business market, and the Dietz 621 is now also being designed for business applications.

It is a small miracle that Dico Digico, the other independent British company dependent exclusively on the mini-computer, last year celebrated its tenth anniversary. Digico has a turnover of about £1m. and is also now going after the business market, having achieved some success in laboratory automation and greyhound race-track betting systems.

Redifon manufactures a small number of minis of its own design for large key-to-disc data preparation systems and flight training simulators. Because Redifon does not have a separate division exclusively devoted to mini manufacture it tends to be left out of discussions of the U.K. mini-computer industry.

The other major British minimeaker is GEC Computers, but this company is not very visible in the market because the majority of its output is incorporated into other GEC group products. However football fans are likely to meet the occasional GEC mini because several big clubs have automatic ticketing systems built around the GEC 2050. But GEC has so far shown little enthusiasm for the minimeaker as a discreet product, and although it is considering developing a business-orientated language—Cobol, Basic or RPG—for the 4000-series minis, it is in no hurry to announce it.

GEC has a remarkable product within the Marconi division of the company. Called Locus-16 and announced in 1974, it pioneered the now-fashionable concept of "distributed processing"—putting small amounts of computing power where it is needed, rather than centralising it. Locus-16 takes the concept to

its logical conclusion, allowing systems to be configured with a central processing facility at all, and is extremely modular so that a handful of standard circuit boards can be configured in a wide variety of simple and complex processing units. But Locus-16 was developed for the very specific task of radar processing, and so far, nobody has thought to exploit its potential in any other application.

It is clear therefore that with the possible exception of France, Europe's minimeakers are either too small to make a noticeable impact on the world market, or only exist because a large company wanted an internal source of small computers for its own use.

Does it matter if British systems houses like Arbat go to DEC for the processors in the advanced financial systems they sell to U.S. banks? Does it matter that the EMI brain and body scanners, almost all of which go for export, incorporate Data General minicomputers, made in the U.S.? Does it matter that the Post Office's automatic mail sorting equipment is built around Hewlett-Packard minicomputers?

IBM certainly think the minicomputer market worthwhile, for last November it announced its first venture into the field with Series 1. It can be argued that the minicomputer makes up only a very small part of the value of each of the products mentioned, and that anyway the arrival of the microprocessor means that the days of the minicomputer are numbered.

If that is true it is indeed cold comfort. For Europe surrendered the general-purpose microprocessor battle to the Americans without firing a shot.

T. R. Palmer

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In your accounts department it takes sales ledger, nominal ledger and payroll in its stride.

In sales, orders can be entered from different areas—all simultaneously. Picking lists and invoices are produced automatically. An automatic watch is kept on bad payers. You're told when their credit's running out. Stock levels are automatically updated.

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No special computer room is needed. Simply a 13-amp power socket. No expensive computer staff either.

**Who are Cincinnati Milacron?**

Cincinnati Milacron are big in computers. In fact we pioneered computer techniques for modern machine tools. We've delivered over 6,000 systems world-wide.

We design, develop and manufacture mini-computer systems for the European market at our Bedford plant. They are available through a network of specially selected distributors with the full backing of our own team of specialists.

**Find out what mini-computers could do for your company**

We've prepared a special tape cassette that explains in easy-to-understand language if you take your business seriously, you should investigate what this latest generation of mini-computers can do for you. You won't regret the small amount of time you invest in listening to the tape. It could make a big difference to the future efficiency and prosperity of your company.

Please let me have your cassette "What mini-computers can do for the smaller company", together with full details of Cincinnati Milacron Systems.

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Company \_\_\_\_\_  
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**CINCINNATI MILACRON**  
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### Robot

steps and each routine can be stored on a cassette far quicker than to do with this change-over on a production line successful product. The counterparts of GEC and are the two big electronic conglomerates it nd Thomson, which had brought out an Editor' onit which allows users to make fast, strongly favoured the minor positional changes to a well solution for CII sequence stored in memory. Thomson wanted the manufacturer to remain unit is actually working. dent. Thus when the Apart from welding work on y company in CII was car production lines, handling up, CGE ended up with castings and operating in con-

junction with large plastics injection machines, the Unimates are quickly finding their way into the intricate investment casting process because of their ability to spin heavy loads, at controlled speeds when the primary wax models are being coated with the ceramics that will ultimately form the moulds. Positional accuracies of 0.06 inch are achieved.

Analogous to this work is the automated assembly of parts for TV sets carried out by, among others, Mullard in Britain. But IBM is seeking to develop a general approach to fabrication and assembly for instances where—in contrast to most of the foregoing—production runs are short and therefore, the machine has to learn to recognise many more parts and probably carry out many more operations.

At the Thomas J. Watson Research Centre, Yorktown Heights, the problems of designing a general purpose assembler is being attacked at many levels and a large amount of computing power is harnessed to the task.

It is one thing to control a fixed sequence of movements between well-defined points from a known base with the assurance that objects to be banded will always come to the same position and do the necessary control work with comparatively simple data processing techniques. It is a much harder task—and one that may prove very expensive to carry out—to derive automatically from plain language instructions all the complex sub-sets of commands in motors, linked with sensor information, that a general-purpose assembler would have to be given. To this interpretative function of the primary instruction language would have to be added ability to recognise parts and reject defective ones.

It is a sobering thought that an instruction seemingly as simple as "put the bearings into the race and insert the spindle" may take five years or more to turn into appropriate computing language and machinery.

Microcomputer enthusiasts might query whether it is still necessary to establish such a control methodology. But there seems to be little doubt that whatever is learned in this way will also be useful—probably has already been most useful—in the design and implementation of automatic assembly equipment now finding its way into a most important area of the electronics industry. This is the point at which the individual devices, calculator chips, watch modules, memories, adders, etc.—which are microscopically small—are linked with the connectors which lead to power sources, keyboards, displays and so on. Device to connector links can be made automatically on fantastically precise machines, rather than by hundreds of operators manipulating bonders under binocular microscopes. Depending on the type of device, it is already cheaper per bond in go automatic, despite capital cost of the equipment.

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If you would like to know what this new generation can mean to your business telephone or write to Mike Croneen, NCR Limited, 206 Marylebone Road, London NW1 6LY. Phone: 01-723 7070.

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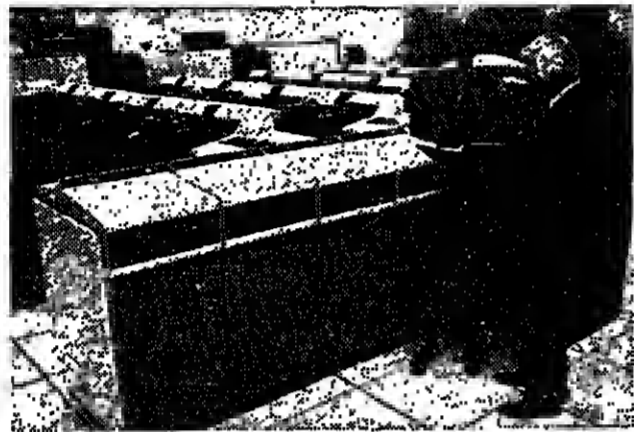
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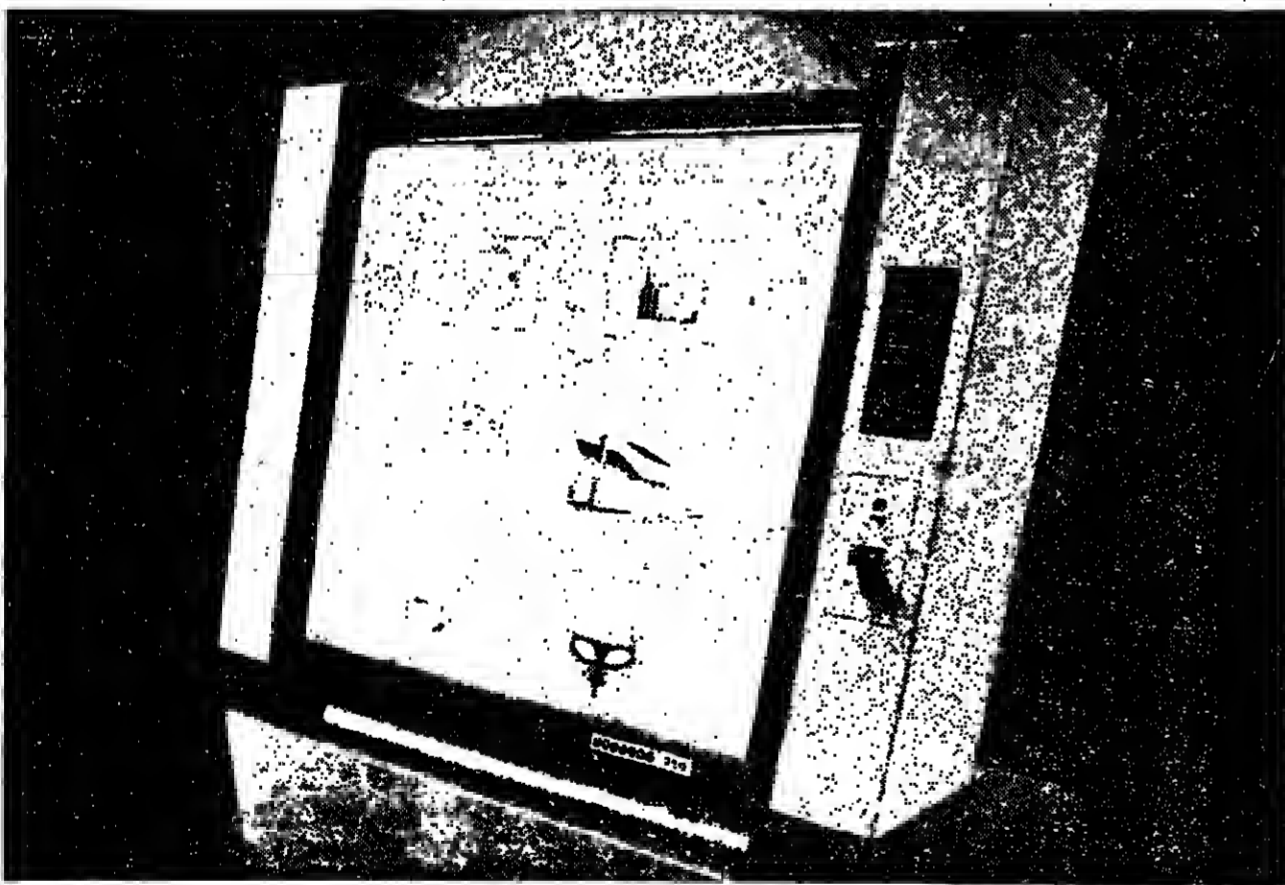
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Last year, we ran an ad where we said that our giant 748 Flatbed Plotter could draw faster than ink flows.

Now we're introducing the 960 Plotter.

It has the fastest throughput in the industry.

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The 960 can draw at a rate up to 30 inches per second. And from a dead start, it can accelerate to that speed after traveling only 3/10 of an inch.

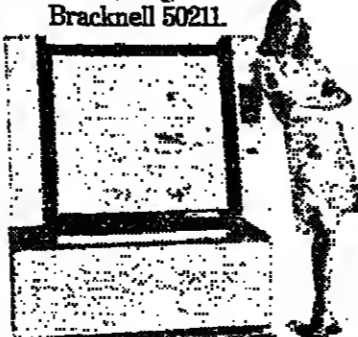
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CALCOMP

# Software changes its style

B. J. (Barney) Gibbens, a director of CAP, the big U.K. software house, clarified the problem of microprocessors for me well over a year ago. We were walking around a micro-processor exhibition, and he remarked that it took him back to his early days in computing. Here were all these engineers with their fascinating new toy "re-inventing computing as if it did not exist."

He claimed not to have done any programming for years, but he thought he could program these, for as they stood one was back in the days of machine code and "making it up as you went along." He did not think that would continue for long.

It is hard to credit it, but as little as eighteen months ago people thought of the micro-processor mainly as a systems component, and not potentially as a computer in its own right. Indeed, one microprocessor manufacturer even had a Press officer who did not send his releases to the computer Press because he did not think they would be interesting.

The recognition of the micro-processor market as one spanning both old and new territory is much more recent, at least on this side of the Atlantic. Because of this, and the lack of past historical data to establish trend lines, the forecasts are very varied. However, there is general agreement among the forecasters that the micro-processor will have moved into three areas in a substantial way by the early 'eighties. The areas are consumer electronics, cars, and computing.

## Production

It is the last which is perhaps of the most interest here, for it is in this area that we can expect the development of the microprocessor power to continue at a rapid rate and individual systems to be created, based on microprocessors. By individual is meant their production in terms of hundreds and thousands, rather than hundreds of thousands.

Perhaps the most useful of the forecasts to use, in large part because they are the most conservative, are those produced by the consultants MacKintosh International, and Iann Barron who edits their publication, Microcomputer Analysis. They calculate that by 1980, the 13 country European market will be taking some 2.5m. units a year (as against the 1.35m. going into consumer electronics and the 900,000 going into cars), of which over 20 per cent (520,000) of those will be bound for the limited.

business/office sector, not all of course being used as computers. (Nearly as many—480,000—they estimate will be going into computers and peripherals as component parts, replacing and/or adding to existing capabilities).

It is important to realise that by 1980 offerings will be far below today's price levels. Barron indicates that he expects the \$20 now paid for the micro-processor, which when assembled on a board with an associated store brings the price up to around the \$100 mark: to become \$10 for the equivalent technology.

It is obvious that if one thought of the microprocessor as a replacement for the computer system now in use, the general purpose computer industry could be heading for economic suicide. It is obvious, but at present it is also wrong. The operative words there are "could be," for the industry shows no signs of heading in that direction. What saves it are two things.

First, though peripheral prices are declining, they show no signs of declining at any similar rate, and in terms of total hardware costs, peripheral devices now make up well over two thirds of most general purpose computer installations. True, storage costs are going to continue to decline, however the requirements for storage are going to continue to increase. Indeed the very existence of the microprocessor may lead to a sharp jump in storage demand.

Secondly there is software. As a rough figure total user costs, however paid, involved in putting together a general purpose computer installation from one of the conventional mainframe manufacturers, split roughly 50/50 to hardware and software. Interestingly enough, with mini-computers, the ratio becomes roughly two to three, but it is two for software, three for hardware, in large part because users accept more standard software solutions.

But with microcomputers remember is that the micro-processor is best thought of as a systems component, the micro-processor forms the heart of a computer system and is a computer in its own right) the ratio on the same basis is the least 20 to one, 20 for software, one for hardware.

It is obvious that at this level, the economics of writing software for microcomputers will be taking some 2.5m. units a year (as against the 1.35m. going into consumer electronics and the 900,000 going into cars), of which over 20 per cent (520,000) of those will be bound for the limited.

It is also obvious that the creation of software for micro-computers is going to be left to the software professionals. Naturally, the manufacturers will do some—they do some already. But theirs will be standard solutions for the mass market. One of the key things to understand about the micro-processor is that it is a device of great generality, and that while few people are likely to wish to spend the required resources to tailor one to their requirements, many are likely to try to tailor small numbers to their requirements, for instance thirty or forty microcomputers in a distributed computer network, each doing the same tasks.

## Microsystems

Thus Comshare have just set up a technical research group to develop microsystems to enhance their existing network, and are envisaging putting them in their computer centres and remote offices. The real question of interest to the user however is, can the computer services industry, particularly the software houses develop tools and techniques to bring down the costs of programme preparation, indeed make it almost programme manufacture.

Certainly, some of the software houses believe they can. Two companies have made announcements recently, and there are others claiming if not quite so loudly, to be in the field.

Zeus Hermes, a software house, has announced its MICRO Z division and offers a service which aims at providing application software to the provision of a complete micro-processor system, both hardware and software, specially tailored to the clients' requirements. Their services are aimed initially at the electronics engineering field, commercial data processing, the mass device manufacturer market—washing machines and the like, and the hobby market, which is a very sizeable market already in the

States. CAP's Microsoft division, contrast, seems to be fixing sights firmly on commercial data processing and its replacement in areas by microcomputers. It does this because it claims to have made a breakthrough in developing techniques to develop software for microcomputers which is in advance of the use in the U.S.

The technique consists using other computers (minis) in the production of the software, and testing it on the micro. In this way it uses the development aids that are already available and saves much time and expense. It is all described in a very useful book published "An Introduction to Microcomputers for Business Applications."

It is by such ventures as of CAP and Zeus Hermes, real progress is going to be measured, for their success otherwise will determine micro-computer usage growth. The very strong case to be made for the need for a British micro-processor/microcircuit industry which because of a quite simple fundamental made in the past by Government and the two major electronics groups the U.S. longer has.

But even if Britain were to start to create one, it would be some considerable time before it would do anything different to what already being done in the and at competitive prices. For now, and for at least next five to ten years, the U.K. has an industry capable of building complex software hardware for large-scale markets, the real added value going to come from software produced by software engineers. And produced by ware houses, for they have skills and the operating levels.

Rex M.

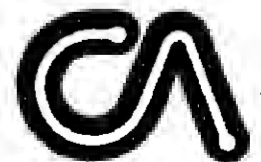
# Computer Automation: A really powerful mini

Over the last five years worldwide sales and profits have increased more than sixfold, building on an already sound financial base. And even for the computer industry we invest a very high percentage of our turnover in engineering and development.

Our startling growth has been based on the success of the Naked Mini series of minicomputers, sold to original equipment manufacturers throughout the world. Powerful minis with the utmost reliability. At low cost. As a natural development we manufacture our own automated test equipment; now sold to major electronics manufacturers on every continent.

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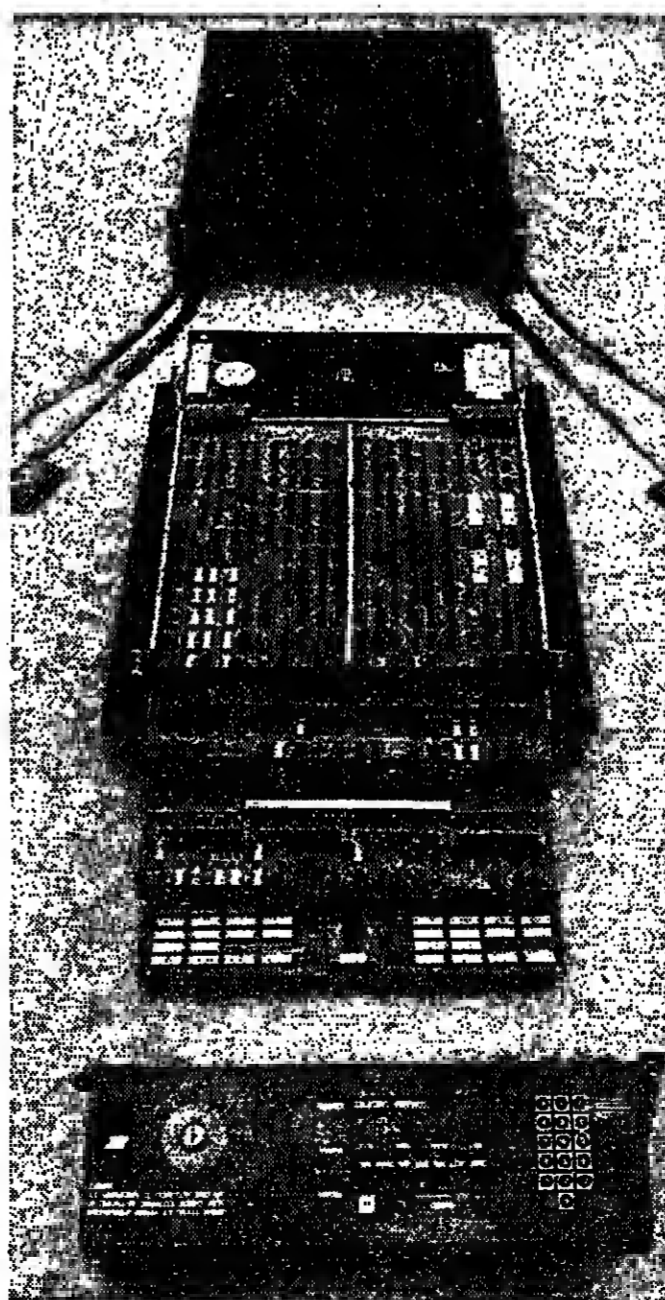
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## Computer Automation

For more information about the company, the Naked Mini, 'CAPABLE' test equipment, or the SyFA System, just write to:

CAI Limited, Hertford House, Denham Way, Maple Cross, Rickmansworth, W3 2XD, Hertfordshire, England. Telephone: Rickmansworth (09237) 7121 Telex: 851-922654.



A far cry from the room full of equipment that was a "small" computer 10 years ago. This is an exploded view of Honeywell's new Series 60 Level 6 model 6/36.







# COMPANY NEWS

## Mentmore Manufg. exports over £1m.

Exports by writing and instrument manufacturers Mentmore Manufacturing Company, in 1976, exceeded £1m. for the first time, against £0.81m. Forward orders, at present on hand, are in excess of £200,000 and the target for the current year is £1.25m. Mr. Christopher Andrews, the chairman, states:

Mr. Andrews adds that, following the big downturn during 1976, the home market is now starting to look more buoyant. Orders so far in the current year are running ahead of last time.

At the half-year on July 31, 1976, total sales showed a slight decline to £3.42m. (£3.55m.) with exports lower at £0.4m. (£0.5m.) Taxable profit slumped to £39,346 (£55,814), but the directors anticipated a marked improvement in the second half over the first six months.

## Reliance Knitwear prospects

WHILE IT is too early to forecast the results for the year to April, 1977, the directors of Reliance Knitwear Group will be disappointed if second half results fall short of the first half profit of £284,000 before tax, states Mr. R. E. Newman, chairman.

At present the company has good order books but 1977 poses so many problems for the British economy that it is difficult to be other than cautious about the calendar year as a whole.

However, the directors have taken a number of steps over the last few months to protect the group from the worst effects of a significant reduction in the level of home demand and they believe that Reliance is in a sound position to weather the storm if it comes.

The interim figures, which show a recovery from a loss of £26,000, were announced recently. At the time the directors said that if expectations were realised the maximum permitted dividend total will be paid. Last year's payment was 1p net.

The company operated from London, Basildon, Reading, Romford, Southampton, Leeds, Stockport, Birmingham and Newport and obtained most of its business from local advertising.

The company closed a week ago when the National West-

## BOARD MEETINGS

The following companies have notified dates of board meetings to the Stock Exchange. Such meetings are usually held for the purpose of considering dividends. Official indications are not available whether dividends are announced in terms of pence and the sub-divisions shown below are based mainly on last year's distribution.

**TODAY**  
Lafayette: ADR Properties, Forewear Industry Investments, Jendusa, Flamingo Anglo American Corporation of South Africa, Charles Rivers, Y. Y. and J. H. Bralton, Drayton Far Eastern Trust, English and Scottish Investors, Marchwell, New York and Garmore Investment

Company	Date
Trust, Provident Financial, St. Andrew Trust, Waterford Glass	Mar. 15
Business	Mar. 15
Capeless	Mar. 15
Charterhouse Industrial	Mar. 15
Cape African International	Mar. 15
Dover (G. H.)	Mar. 15
Hunt and Moscow (Middleton)	Mar. 15
Mitchell Court Transport	Mar. 15
Thames Plywood Manufacturing	Mar. 15
Yarrow	Mar. 15
Flamingo	Mar. 15
Flamingo	Mar. 15
Madame Tussauds	Mar. 15
Holms	Mar. 15
Watnough	Mar. 15

## Lesney explains repayment

MR. PAUL TAPSCOTT, chairman of Lesney, explains in a letter to shareholders that the company's offer to repay the outstanding £1m. of 10 per cent. Debenture Stock 1990-95 at £100 compares with a market price of 266½ on February 4, just before the proposals were first announced.

In addition, the gross redemption yield at the repayment price is 12.38 per cent, which compares with 14.24 per cent, for 12½ per cent Treasury Loan 1995 on February 15.

A meeting has been convened for March 15 to approve the proposals which include accrued interest up to the repayment date on March 31, provided the proposals are passed.

Mr. Tapscott says the repayment will facilitate a reorganisation of the companies within the Lesney Group and a rearrangement of the borrowing facilities available to it.

At present the company has good order books but 1977 poses so many problems for the British economy that it is difficult to be other than cautious about the calendar year as a whole.

However, the directors have taken a number of steps over the last few months to protect the group from the worst effects of a significant reduction in the level of home demand and they believe that Reliance is in a sound position to weather the storm if it comes.

## Smallshaw expects to improve

AN IMPROVEMENT in profit is anticipated in 1976-77 for R. Smallshaw (Kaltwear), barring further deterioration in the economy, says R. F. A. Smallshaw, the chairman, in his annual statement. But he points out that margins are still under pressure although order books are healthy.

Pre-tax profit, as reported on January 23, rose from a depressed £4,554 to £104,191 for the year ended September 30, 1976. Sales were up from £2,466m. to £2,966m. and the dividend was doubled to 10 p.

At the year and freehold properties held by the group were up £95,881 at £239,458, and net current assets were £11,509 higher at £252,778.

After overcoming difficulties with product changes and yarn supply problems, Castle Kaltwear finished the year with a small profit. Additional knitting plant was installed in the early part of the current year and profits are expected to improve.

Mr. Smallshaw adds that Carrington Virella holds a 10 per cent interest in the group. Meeting, Hinchley, on March 14 at noon.

## Irish Gases plans £12m. expansion

MAJOR investment plans, chiefly involving a new £12m. industrial gas-producing plant in Cork, are announced by Irish Industrial Gases, a subsidiary of BOC, and Hammond Holdings, of Dublin.

Total output by IIG in the next four years is expected to be in the region of £12m.

The new plant is to be built on site at Cork's Little Island Industrial Estate. It is due to come on stream in July next year and will be able to produce 70 tons of oxygen and nitrogen a day.

This phase, is likely to be followed by the addition of a second 70-ton-a-day production unit costing about £3m. and to cope with the increased output from the new plant, IIG will spend a further £5m. over the four years on extra distribution and storage facilities.

The current project will provide a new weaving shed together with new looms at Fieldhouse Mills, Rochdale. This will help in meeting the growing demand for high technology fabrics which are required by the rubber industry for the reinforcement of conveyor belts and similar products.

## John Bright's major investment

THE JOHN BRIGHT Group is making a £1.1m. investment in its industrial textiles division, following the spending of a similar sum last year in designing and building a second fabric treatment machine which is now in full commercial production.

The current project will provide a new weaving shed together with new looms at Fieldhouse Mills, Rochdale. This will help in meeting the growing demand for high technology fabrics which are required by the rubber industry for the reinforcement of conveyor belts and similar products.

## EQUITABLE LIFE

The Equitable Life Assurance Society is withdrawing its Home Plus Income Plan to new entrants as from the end of this month until further notice. This scheme was designed to enable the elderly to use their house, usually their main capital asset, to

## BIDS AND DEALS

### British Borneo still reject Gold Fields

In the light of the extension until February 23 of Consolidated Gold Fields' £5m. offer for British-Borneo Petroleum, having gained acceptances of 10.2 per cent so far, Mr. Campbell L. Nelso, chairman of British-Borneo, has set an up to date valuation of the company to holders.

Restating his own opposition that of fellow independent directors and financial advisers Morgan Grenfell, Mr. Nelso states that British-Borneo's portfolio of investments has risen in value by £14m. since January 1976 and by over £1m. since December 17 when the 14p a share offer at that stage agreed, was first announced.

The underlying value of each British-Borneo share at February 17 was 18p against 16p of December 17 or 13p against 11p when allowance is made for the liability to taxation which would arise on disposal of the portfolio.

Consolidated Gold has stated that it will not increase its offer; it already holds 25.3 per cent of British-Borneo.

### OLIVER RIX SALE

Contracts have been exchanged whereby Oliver Rix (garages) will sell the freehold property and working assets of its Cherry Hinton garage, Cambridge, to Marshall's.

Consideration for the sale of the freehold property will be £275,000. For working assets, it will be determined by a valuation based on a joint sale of the property and adopting Oliver Rix's normal accounting procedures. Total proceeds of the sale are expected to be not less than £500,000. The effective date for the transfer will be February 28.

This sale is in line with the Oliver Rix policy of rationalising the motor division by disposal of businesses which are not producing an adequate return.

### GATEWAY SEC.

Linford Holdings received acceptance offers for the shares of Gateway Securities not already owned in respect of 295,137 Ordinary shares, 2,499,334 A Ordinary and 7,503 7 per cent Preference shares.

Together with the 248,069 Ordinary, 2,198,077 A Ordinary and 2,061 Preference of Gateway Securities Company has a 75 per cent interest in the company.

The company's policy of holding some liquidity, because of the volatile nature of the Stock Market and the continuing high rate of inflation, has resulted in sterling benefited the revenue account through the very high interest rates available. During 1976 the gross revenue rose 10.5 per cent to £819,512.

As reported on February 18, premium income from new and existing business also increased by 17 per cent to £207m.

Though the directors have not changed their views concerning the Stock Market the company's liquidity - down £200,000 (increase £257,000) and it has been further reduced, for the time being, in recent weeks. £41.7 million in 1977.

The directors comment that they intend to reduce disparity between dividend payments. They would hope to do this by lifting

### GLADDING INTERNL.

Three leading manufacturers in the U.K. fishing tackle industry are to be established as one operating company - Gladding International, with headquarters in Redditch.

The move follows the reorganisation and merging of activities of Gladding and associate companies K. P. Morrill, Falmouth, and Edgar Sealey and Sons, Redditch.

### FLUIDRIVE

Fluidrive Engineering has acquired the capital of Allen Bennett, manufacturers of three speed controlled adjustable speed drives and control systems. In its last financial year Allen Bennett had a turnover in drives and drive systems in excess of £500,000.

### SHARE STAKES

Manchester Ship Canal Company has been informed by London and Manchester Assurance Company that it has acquired 12,500 more Preference shares, bringing total interest up to 787,500 shares. Manchester Ship's capital comprises 3,990,990 Preference shares.

British Borneo Petroleum Syndicate announces that Consolidated Gold Fields holding in the company has increased to 25.3 per cent.

Alpine Holdings announces increases in directors' shareholdings. Mr. A. J. Dyer 1,588,417 (15.3 per cent), Mr. E. J. Singer 1,071,817 (13.2 per cent), and Mr. H. Stoller 1,608,416 (16 per cent).

### ASSOCIATE DEALS

McAnally, Montgomery purchased on February 17 10,000 C.H. Industrials at 27p on behalf of 295,137 Ordinary shares, 2,499,334 A Ordinary and 7,503 7 per cent Preference shares.

Brewin, Dilkhoo purchased for associates 3,000 Cattle Holdings ordinary shares at 40p, 100,000 W. Greenwell sold 15,256 Gateway Securities "A" Ordinary at 62p on behalf of an associate of Gateway.

### Meldrum sees further progress

The directors of Meldrum Investment Trust say they will maintain the quality of investment holdings and look forward to a further increase in the flow of dividends from them in 1977.

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### NEW BUSINESS AT CROWN LIFE

Crown Life reports new sums assured for life assurance and annuity business up by 17 per cent to £22m for 1976. Total revenue, including investment income and existing business also increased by 17 per cent to £207m.

The total sums assured in force grew to £11.7m. and total assets increased from £600m. to £650m. in its first full year of trading the competitive products, issued by the wholly-owned U.K. subsidiary, Crown Life Pensions carried gross premium income of over £1.5m. of which £600,000 was reinsured with the parent company.

### RESULTS AND ACCOUNTS IN BRIEF

CENTRAL LINE SECURITIES—Results year to September 30 1976, already known. Net current assets £262,000 (£276,371). At year end, company's aggregate holding company, Lombo, held 53.1 per cent. Dividend for 1976 of 4.5 p per share made by Lombo on January 27, 1977. Meeting, 28, Aldermanbury, E.C. 4, Friday, March 11 at 11.30 a.m.

DOLLY TEA HOLDINGS—Approximate crop for season 1976 was 270,000 kg. (£27,750 kg.). Sales to November 30, 1976, were 166,911 kg. at 75p. The 15.70 per kg. (106,000 kg. at 75p. £12,750) subject to tax (£2,625,000) made by Lombo on January 27, 1977. Meeting, 28, Aldermanbury, E.C. 4, Friday, March 11 at 11.30 a.m.

GOLD FIELDS GROUP—Dividends already announced will be paid in U.K. currency at an exchange rate of 11.6666 to £1. New Withershead Gold Engineering Company, 1969-70: Gold Fields of South Africa, 1976-77: £11.3m. at half-year.

JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY—Dividend already announced, comprising 26,270 shares per share. After re-investment and U.K. tax, dividend is £1,200. Meeting, NEW HIBERIAN INVESTMENT TRUST—Half-year results already known.

SELLING GOLD—MIRAGE AND FINANCE—Profit before tax half year ended September 30, 1976, was £1,007 (£1,783), subject to tax (£2,420,000). Figures do not reflect expansion of re-financing by acquisition of 25 per cent of 30 September. Figures for full year will reflect an initial contribution from this development. Sellmore is currently investigating further possibilities for the acquisition of income from mineral activities.

TRUST—7th 6 months to January 31, 1977: Pre-tax profit £8,210,771, after £2,200,000 interest (£2,200,000). The directors expect to pay a dividend of 10p per share in H. New Withershead Gold Engineering Company, 1969-70: Gold Fields of South Africa, 1976-77: £11.3m. at half-year.

DISCOUNT—Results year ended September 30, 1976 and observed from an overseas reported January 18, 1977: Pre-tax profit £2,770, (£2,770). Current assets £2,550 (£1,260). Dividend £1,200. Meeting, 28, Aldermanbury, E.C. 4, Friday, March 11 at 11.30 a.m.

DISCOUNT—Results year ended September 30, 1976 and observed from an overseas reported January 18, 1977: Pre-tax profit £2,770, (£2,770). Current assets £2,550 (£1,260). Dividend £1,200. Meeting, 28, Aldermanbury, E.C. 4, Friday, March 11 at 11.30 a.m.

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## Two stockbrokers in City court to-day

BY MICHAEL LAFFERTY  
MR. LEWIS ALTMAN and Mr. Robert Carnes, directors of suspended City stockbrokers Lewis Altman and Co., who were arrested on Saturday by officers of the City of London Police for alleged breaches of the Exchange Control Act, 1947, will appear at the Guildhall Justices at noon to-day.

Lewis Altman and Co. was suspended from trading by the Exchange Council in April, 1976, pending clarification of its position following the Treasury's revocation of certain permissions granted it under the Exchange Control Act.

The Treasury confirmed yesterday that the matter has been under intensive investigation by Bank of England and Treasury officials since August 1975. The results of the inquiry were sent to Sir Norman Shephard, Director of Public Prosecutions, who decided to apply for arrest warrants.

## Crosland's colleagues pay their tributes

TRIBUTES were paid to Mr. Anthony Crosland, the Foreign Secretary, who died on Saturday. Mr. James Callaghan, Prime Minister, said: "I am deeply saddened by the tragic death of Tony Crosland. For 30 years he was a close colleague and friend and a major political force in the country and the Labour Party."

"The heartfelt sympathies of the Cabinet and all his colleagues go to his wife and family in their bereavement. My heart goes out to Sir Norman Shephard, Director of Public Prosecutions, who decided to apply for arrest warrants."

Mr. Anne Armstrong, the Ambassador, said: "I am deeply saddened by Foreign Secretary Crosland's death. 'I saw at first bend his vice to his country and his sonally have come to a great friendship. My heart goes out to Susan Crosland and the family at this time of great loss and bereavement.'"

## Cartier necklace fetches £71,000

SOTHEBY Parke Bernet's sale of jewels at St. Moritz at the weekend produced £1,437,500. The highest prices was the £71,428 paid by Graaf for an emerald and diamond necklace by Cartier of Paris.

An emerald and diamond ring—the emeralds of 13.75 carats—fetched £54,500 and an emerald and diamond bracelet set with five step-cut emeralds was sold for £50,000 to a Saudi Arabian dealer.

A sale of European art and tapestries at Sotheby Parke Bernet, New York, £119,570. A Flemish tapestry, dating from the half of the 16th century, for £6,433. A similar tapestry fetched £5,848.

## SNOW REPORTS

Station	Depth (cm)	State	Weather
Grindwold	20	1/2	Fair Cloud
Fish affecting all slopes			
Isola 2000	250	300	Good Snow
Heavy snow off piste.			
La Plagne	150	250	Good Cloud
Excellent skiing conditions.			
Corren	20	100	Good Cloud
Excellent skiing conditions.			
St. Anton	80	200	Good Cloud
Good skiing, warm wind.			
Zermatt	45	170	Good Cloud
Excellent skiing conditions.			

## SIMCO MONEY FUN

Rate	Deposit	Rate	Deposit
12.5%	1 month	12.5%	1 month
12.5%	3 months	12.5%	3 months
12.5%	6 months	12.5%	6 months
12.5%	1 year	12.5%	1 year

## Base Rate Change

Rate	Deposit	Rate	Deposit
11.5%	1 month	11.5%	1 month
11.5%	3 months	11.5%	3 months
11.5%	6 months	11.5%	6 months
11.5%	1 year	11.5%	1 year

## BANK OF BARODA

Bank of Baroda announce that, for balances in their books on and after 21st February, 1977, and until further notice their Base Rate for lending is 11½ per annum. The deposit Rate on all monies subject to seven days notice of withdrawal is 8 per annum.

All these Notes having been sold, this announcement appears as a matter of record only.



## European Coal and Steel Community

U.S. \$50,000,000 7½ per cent. Notes 1977-1982

Country	Bank Name	Country	Bank Name
Amsterdam	Amsterdam-Rotterdam Bank N.V.	Italy	Banca Commerciale Italiana
Banque Internationale à Luxembourg	Banque Internationale à Luxembourg S.A.	Germany	Deutsche Bank Aktiengesellschaft
Dresdner Bank	Dresdner Bank Aktiengesellschaft	Switzerland	Swiss Bank Corporation (Overseas) Limited
Union Bank of Switzerland	Union Bank of Switzerland (Securities) Limited	Belgium	Warburg Paribas Becker Inc.
ABD Securities Corporation	Algonquin Bank Nederland N.V.	Austria	Arachold and S. Weidendorfer, Inc.
Bank of America International	Banca Nazionale del Lavoro	Spain	Banco de España
Bank of Montreal	The Bank of Montreal	France	Banca d'Algerie
Bank of Tokyo	The Bank of Tokyo-Mitsubishi B.N.	Spain	Banco de España
Bank of West Indies	The Bank of West Indies	Spain	Banco de España
Bank of the Americas	The Bank of the Americas	Spain	Banco de España
Bank of the Caribbean	The Bank of the Caribbean	Spain	Banco de España
Bank of the Pacific	The Bank of the Pacific	Spain	Banco de España
Bank of the South	The Bank of the South	Spain	Banco de España
Bank of the North	The Bank of the North	Spain	Banco de España
Bank of the East	The Bank of the East	Spain	Banco de España
Bank of the West	The Bank of the West	Spain	Banco de España
Bank of the South	The Bank of the South	Spain	Banco de España
Bank of the North	The Bank of the North	Spain	Banco de España
Bank of the East	The Bank of the East	Spain	Banco de España
Bank of the West	The Bank of the West	Spain	Banco de España
Bank of the South	The Bank of the South	Spain	Banco de España
Bank of the North	The Bank of the North	Spain	Banco de España
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Bank of the East	The Bank of the East	Spain	Banco de España
Bank of the West	The Bank of the West	Spain	Banco de España
Bank of the South	The Bank of the South	Spain	Banco de España
Bank of the North	The Bank of the North	Spain	Banco de España
Bank of the East	The Bank of the East	Spain	Banco de España
Bank of the West	The Bank of the West	Spain	Banco de España
Bank of the South	The Bank of the South	Spain	Banco de España
Bank of the North	The Bank of the North	Spain	



Outstanding dividends

convenience of readers the dates when some of the important company dividend statements may be expected in the few weeks are given in the following table.

Table with columns: Date, Announcement last year, Final 1976, Dividend, Announcement last year, Final 1976, Dividend. Lists various companies like Anglo-Siam, Anglo-Siam, Anglo-Siam.

Public Works Loan Board rates

quote loans B are 1 per cent. higher in each case than non-B. Equal instalments of principal, 1/2 equal repayments. Effective from February 19, 1977.

Table with columns: Rate, 1976/77, 1977/78, 1978/79. Lists rates for different periods.

FIXED INTEREST STOCKS

Table with columns: Stock, 1976/77, 1977/78, 1978/79. Lists various fixed interest stocks like Anglo-Siam, Anglo-Siam.

"RIGHTS" OFFERS

Table with columns: Stock, 1976/77, 1977/78, 1978/79. Lists rights offers for various companies.

BASE LENDING RATES

Table with columns: Bank, Rate. Lists base lending rates for various banks like Bank of Montreal, Bank of Montreal.

INTERNATIONAL COMPANY NEWS

Alcan to keep captive power

Alcan has 700,000 tons of smelting capacity in Quebec, mostly at the Saguenay region smelting system, out of its total Canadian smelting capacity of one million tons.

Intercom rights issue to raise B.Frs. 3.83bn.

Intercom, the largest producer and distributor in Belgium's almost totally privately owned electricity sector, has announced that it intends to raise B.Frs. 3.83bn. (€60.8m.) in a one-for-five rights issue to be financed as an investment programme which will be taken up at the end of May.

Boat builders to merge

THREE of Sweden's leading pleasure boat manufacturers, the combined sales of the three companies amounted to Kr.180m. (€25m.) last year.

Money and Exchanges

Bank of England Minimum Lending Rate 12 per cent. (since February 3, 1977). Fixed period interest rates fell quite sharply around the middle of last week, particularly for the shorter periods.

FOREIGN EXCHANGES

Table with columns: City, Rate. Lists foreign exchange rates for various cities like New York, London, Paris.

EURO-CURRENCY INTEREST RATES

Table with columns: Term, Rate. Lists Euro-currency interest rates for various terms like 1 month, 3 months.

EXCHANGE CROSS-RATES

Table with columns: City, Rate. Lists exchange cross-rates for various cities like Frankfurt, New York, Paris.

MINING NOTEBOOK

Mr. Grey casts his spell over Pancontinental

THREE WEEKS ago I reported that Mr. Tony Grey, the chairman of Pancontinental, was coming to London to attend a Uranium Institute meeting, adding that his visits were often accompanied by an upward flip in the share price.

Analysing the Rennies results

By Richard Rolfe. JOHANNESBURG, Feb. 20. RENNIES Consolidated, the trading group controlled by Jardine Matheson, has reported some disappointing profit figures for the 18 months to December 31, which have been related to those for the 12 months to June 30, 1976.

Share verdict

At this point it is as possible to quote from the latest circular sent to clients by London brokers Laurence Prust, it says that Australia is to set up an energy advisory committee to advise the government on a national energy policy.

Subsidy for vehicle fleets

AS ANYONE who has recently bought a new car or motor vehicle will tell you, manufacturers' prices have continued to rise, and rising, if not at an alarming rate.

DELSON & Co. Limited

The 25th Annual General Meeting of the Company was held in Birmingham on Friday, February 18th, 1977. In my report last year I stated that an optimistic forecast could not be made, and as it turned out this was correct.

INSURANCE BASE RATES

Table with columns: Rate, Insurance Base Rates. Lists insurance base rates for various types of insurance.



BY TONY HAWKINS

EUROBONDS

Difficult to be optimistic about short-term prospects

A SENSE of drift pervaded the Eurobond market last week with secondary market activity at a low level and the primary market losing momentum against a background of new issue indigestion.

January, U.S. consumer prices were rising at an annual rate of 9.6 per cent. This will have some shivers down the spine of bond investors.

981 level, suggesting that investors are looking for higher coupons on 12-year paper.

life-by about a year—than for Norpice, which undoubtedly is a high-grade credit.

encountered reasonable demand for Norpice, which undoubtedly is a high-grade credit.

push up the coupon. An important development in the Swiss Franc market was the pricing of the Phillips issue at par with a 5 per cent coupon.

reluctance in go for 12-year paper. Interestingly enough last year's Norges Kommunalbank D-Mark issue was also a 7 per cent coupon but had a 5-year maturity and current stands at a premium in the secondary market.

In the dollar market, it has for the most part—been the mixture as before. New issues are on the whole, not being firmly placed and opening at a discount from their issue price.

Currently on offer in the dollar sector are five issues, including a new floating rate note for Banque Louis Dreyfus.

success and with an amount of only \$200 million raised, dealers were a confident of its success.

McLeod, Young, Weir Greenhills Inc. and Salomon Brothers

understood to have reacted favourably to the decision to

to 8 1/2 per cent. At the same time, the managers said they anticipated pricing the issue so as to yield 9 per cent, implying a price of 99 or 99 1/2.

in the light of German

Table with columns: DOLLAR BONDS, Amount \$m., Maturity, Av. life years, Coupon %, Offer yield %, Lead manager, Price. Includes entries for Newfoundland, Hitachi Zosen, Volvo, Korea Dev. Bank, Toyo Kanetsu, Saab-Scania, Banque Louis-Dreyfus, Euroguilders, D-MARKS, CAN. DOLLARS.

Indices

NEW YORK - DOW JONES

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Industrial, Finance, Transport, Utilities, Trading.

INDICES

MONTREAL

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Industrial, Composite.

JOHANNESBURG

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Anglo American, Anglo-Transvaal, Anglo-Eastern, Anglo-Consolidated.

GERMANY

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes A.G. Alkermid, A.G. Alkermid, A.G. Alkermid.

AUSTRALIA

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes ACMI, Anglo-Australia, Anglo-Australia.

MILAN

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Alitalia, ANI, ANI, ANI.

STANDARDS AND POORS

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Industrial, Composite, Ind. Div. Yield, Ind. P/E Ratio, Long Govt. Bond Yield.

INDICES

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Australia, Belgium, Denmark, Germany, Holland, Hongkong, Italy, Japan, Singapore.

PARIS

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Air France, Air France, Air France.

TOKYO

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Asahi, Asahi, Asahi.

AMSTERDAM

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Alkermid, Alkermid, Alkermid.

BRUSSELS/LUXEMBOURG

Table with columns: Feb 1977, Feb 1976, High, Low, Close. Includes Alkermid, Alkermid, Alkermid.

OVERSEAS SHARE INFORMATION

NEW YORK

Large table listing various international stocks with columns for High, Low, Stock, Feb 1977, Feb 1976, High, Low, Close.

NEW YORK

Large table listing various international stocks with columns for High, Low, Stock, Feb 1977, Feb 1976, High, Low, Close.

NEW YORK

Large table listing various international stocks with columns for High, Low, Stock, Feb 1977, Feb 1976, High, Low, Close.

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NEW YORK

Large table listing various international stocks with columns for High, Low, Stock, Feb 1977, Feb 1976, High, Low, Close.



AUTHORISED UNIT TRUSTS

Table listing various unit trusts and funds, including their names, managers, and performance metrics. Columns include fund names, managers, and various financial indicators.

INSURANCE, PROPERTY, BONDS

Table listing insurance, property, and bond companies, including their names, addresses, and contact information. Columns include company names, addresses, and phone numbers.

ANCIAL TIMES STOCK INDICES. Table showing various stock indices and their values.

HIGHS AND LOWS S.E. ACTIVITY. Table showing high and low values for various securities.

FT-ACTUARIES INDICES. Table showing actuarial indices and their values.

KONG TEL AVIV. Table listing companies in the KONG and TEL AVIV regions.

ORE STOCKS. Table listing various ore stocks and their prices.

SHARE INFORMATION SERVICE. Table providing share information and service details.

OFFSHORE AND OVERSEAS FUNDS

Table listing offshore and overseas funds, including their names, managers, and performance metrics. Columns include fund names, managers, and various financial indicators.

NOTES

Text providing additional notes and information related to the funds and services listed.



BANKING APPOINTMENTS

AMERICAN EXPRESS INTERNATIONAL BANKING CORPORATION

We are seeking to appoint BUSINESS DEVELOPMENT/CREDIT OFFICERS to assist in the expansion of our Marketing Programme. The successful applicants will be responsible for promoting a comprehensive range of financial and banking services to Commerce and Industry...

Jonathan Wren Banking Appointments. The personnel consultancy dealing exclusively with the banking profession. We are looking for suitably experienced candidates to fill the following vacancies: REIMBURSEMENTS (M.T.'s/T.T.'s) c. £3,000...

Commenting with the issue of 8th March Banking and Insurance Appointments advertisements will appear on Tuesdays and the heading will be expanded to include Legal Appointments For further details contact: James Jarratt on 01-248 8000 Ext. 539

UNIVERSITY APPOINTMENTS

THE CITY UNIVERSITY BUSINESS SCHOOL LECTURES IN BUSINESS ECONOMICS Applications are invited for the above post. The successful candidate will be principally involved in teaching and developing research in price theory and its application...

WEEK'S FINANCIAL DIARY

The following is a record of the principal business and financial engagements during the week. The Board meetings are mainly for the purpose of considering dividends and official indications are not always available whether dividends concerned are interim or final.

Table with columns for TO-DAY, TO-MORROW, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, SUNDAY. Lists company meetings, board meetings, and dividend/interest payments for various firms like Anglo-American, Anglo-International, and others.

APPOINTMENTS

Chief executive for Aerosols International

Mr. Peter J. Dunckerley has been appointed managing director of AEROSOLS INTERNATIONAL, part of the health and chemicals division of ICI. Mr. E. F. Hill has been appointed regional director of South West Region of LAING CONSTRUCTION...

GENERAL APPOINTMENTS

STOCKBROKING Overseas Sales Representative. A leading firm of City Stockbrokers require 2 Sales Representative (male or female) for their Australian Department based in London. Salary negotiable depending on age and experience but not less than £6,000 p.a., plus fringe benefits.

LEGAL NOTICES

No. 6037 of 1977 In the HIGH COURT OF JUSTICE Chancery Division Companies Court. In the Matter of MARSHALL-HICKY CONSTRUCTION LIMITED and in the Matter of The Companies Act, 1948. NOTICE IS HEREBY GIVEN that a Petition for the winding up of the above-named Company by the High Court of Justice was on the 3rd day of February 1977 presented to the said Court by JOSEPH WILFRID WILLIAM BUNTON...

COMPANY NOTICES

TAISHO MARINE AND FIRE INSURANCE COMPANY, LIMITED

DEPOSITARY RECEIPTS TO BEARER (issued pursuant to the Deed Poll dated 28th July, 1961) Notice of meeting of the holders of the Certificates evidencing Depositary Shares each representing 10 Shares of Common Stock of 50 Yen each. NOTICE IS HEREBY GIVEN, pursuant to Clause 2 of the Deed Poll (the "Deed Poll") dated 28th July, 1961 and made by Hambros Bank Limited (the "Depositary") as modified and supplemented by the supplemental conditions endorsed on the Certificates...

No. 6037 of 1977 In the HIGH COURT OF JUSTICE Chancery Division Companies Court. In the Matter of MARSHALL-HICKY CONSTRUCTION LIMITED and in the Matter of The Companies Act, 1948. NOTICE IS HEREBY GIVEN that a Petition for the winding up of the above-named Company by the High Court of Justice was on the 3rd day of February 1977 presented to the said Court by JOSEPH WILFRID WILLIAM BUNTON...

CLASSIFIED ADVERTISEMENT RATES. Table with columns for Advertiser, Per column line, and Rate. Includes categories like Industrial & Business, Residential Property, and Educational.

RESTAURANTS

Somewhere Different for Lunch? THE MANCHESTERIAN 42 Baker Street, London W1. Tel: 01-535 0321. Monday to Saturday noon to 9 p.m. and 6 p.m. to 1 a.m. Sunday noon to 2.30 p.m. and 8 p.m. to 11.30 p.m.

Financial handiwork. Sumitomo Bank. Where up-to-the-minute computerization helps make business easier and more efficient. But helpful hands will always play a prime part in getting a project done. The Sumitomo Bank, Limited. Osaka, Tokyo, Kyoto, Kobe, Nagoya and other major cities in Japan. London, Düsseldorf, Brussels, Vienna, New York, Chicago, Los Angeles, San Francisco, Seattle, Hong Kong, Singapore, Jakarta, Sydney, Mexico City, São Paulo, Rio de Janeiro, Beirut, Tehran.

THE BIRMINGHAM MINT LTD. NOTICE IS HEREBY GIVEN that a dividend of 5.10 per share in respect of the 5 months ended 31st March, 1977, will be paid on Friday, 24th April, 1977, to all Preference Shareholders registered in the books of the Company on Monday, 20th February, 1977. By Order of the Board, A. SINGER, Secretary.

J. A. OVENISH AND COMPANY LIMITED. NOTICE IS HEREBY GIVEN that the TRANSFER BOOKS of the 41st Redeemable Debenture Stock 1881818 and the 51st Cumulative Preference Stock will be closed from 17th to 30th March, 1977. By Order of the Board, A. LUTHWALD, Secretary.

PERSONAL

OVER 40,000 SCHOOLS AND EDUCATIONAL ESTABLISHMENTS can be reached by mail. The Educational Addressing and Mailing Service, Darby House, Redhill, Surrey, RH1 3ON. Mertonham 2233.

GOURMET

GALLIPOLI RESTAURANT, Off Old Road, London EC2, Open every day for lunch dinner and evening 7 o'clock to 1.15 a.m. Mon.-Sat. 67. Tel. 058 1922











INDUSTRIALS - Continued

Table of industrial stocks including companies like British Petroleum, Shell, and ICI, with columns for stock name, price, and other financial metrics.

MOTORS, AIRCRAFT TRADES

Table listing motor and aircraft related companies such as Rover, Jaguar, and various aircraft manufacturers.

PROPERTY - Continued

Table of property-related companies and their stock prices, including various real estate and construction firms.

TRUSTS - Continued

Table listing various trusts and their associated stock prices, covering a wide range of investment vehicles.

TRUSTS - Continued

Continuation of the trusts table, listing more trust companies and their market data.

SANWA BANK Tokyo, Japan. Serving the world with financial expertise. Includes a logo and contact information.

MINES - Continued

Table of mine-related companies and their stock prices, including various mining operations.

AUSTRALIAN

Table listing Australian companies and their stock prices, including major firms like BHP and Woolworths.

TINS

Table listing tin-related companies and their stock prices, including various tin mining and processing firms.

COPPER

Table listing copper-related companies and their stock prices, including various copper mining operations.

MISCELLANEOUS

Table listing miscellaneous companies and their stock prices, including various other industrial and service firms.

NOTES

Notes section providing information about interest rates, bank rates, and other financial details.

TEAS

Table listing tea-related companies and their stock prices, including various tea plantations and processors.

MINES

Table listing various mines and their stock prices, including different types of mineral extraction operations.

EASTERN RAND

Table listing companies in the Eastern Rand region and their stock prices.

PAR WEST RAND

Table listing companies in the Par West Rand region and their stock prices.

O.F.S.

Table listing O.F.S. (Overseas Financial Services) companies and their stock prices.

FINANCE

Table listing finance-related companies and their stock prices, including banks and financial institutions.

DIAMOND AND PLATINUM

Table listing diamond and platinum related companies and their stock prices.

INSURANCE

Table listing insurance companies and their stock prices, including various life and general insurance firms.

PAPER, PRINTING, ADVERTISING

Table listing paper, printing, and advertising companies and their stock prices.

PROPERTY

Table listing property-related companies and their stock prices, including real estate and construction firms.

INSURANCE

Continuation of the insurance table, listing more insurance companies and their market data.

PROPERTY

Continuation of the property table, listing more property-related companies and their market data.

PROPERTY

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Continuation of the property table, listing more property-related companies and their market data.

PROPERTY

Continuation of the property table, listing more property-related companies and their market data.



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Britain's leaders in Heating  
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## Iran to cut defence spending

By Robert Graham,  
Middle East Correspondent

TEHRAN, Feb. 20. IRAN HAS decided to cut defence spending in order to come to terms with the reduced revenue expectations resulting from the two-tier oil price structure.

The cut of 2 per cent was announced by Mr. Abdul Majid Majidi, the director-general of the plan and Budget Organisation, presenting what is nevertheless a record \$4bn budget for the coming fiscal year.

The cut may be temporary, pending an upturn in oil liftings. Observers also believe that it is probably designed to convince the Carter Administration that Iran's military spending is not exaggerated.

Nevertheless this is the first time since 1941, when the Shah came to the throne, that he has agreed to trim expenditure on the armed forces.

Mr. Majidi said that originally the budget was planned to total \$3.5bn, more than the sharp reductions in oil liftings last month prompted a revision of estimated expenditure. He said the Shah decided "at the last minute to cut the defence budget by 160bn, rials" (\$2.28bn), the remaining cuts coming from civilian expenditure.

The main military cuts would come in "items related to the construction of naval and air bases" as well as procurement of hardware, he said.

## Tories divided over next phase of wages policy

By Christian Tyler, Labour Staff

DIFFERENCES within the Conservative Party about the desirability of neutral control of incomes were highlighted at the week-end as the debate about the next pay policy continues to widen.

Sir Geoffrey Howe, Shadow Chancellor, said that a sustained reduction of Government overspending and control of the money supply were necessary if inflation and unemployment were to be dealt with.

These were the real issues behind the talk about the next pay policy, he said, and he called on the Prime Minister and his colleagues to spell out more clearly the true meaning for jobs of the IMF loan conditions imposed on Britain.

"These disciplines will inevitably require a further fall in the cost of living standards," he said. "It is essential that people understand the need for self-restraint in free bargaining, where pay rises were kept in line with what a company or industry could afford."

But Mr. Peter Walker, who is not in the Shadow Cabinet, attacked the Conservative preference for tight monetary control over incomes policy by saying that for the Government to abandon pay restraint would be "an act of supreme lunacy."

Speaking in his Worcester-shire constituency yesterday, Mr. Walker said there was an "unholy alliance" of market economists and militant trade unionists making an effective attack on the need for another pay policy phase after July.

His speech in turn provoked criticism from the Selsdon Group of Conservatives which said it was "tragic" that some leading Tories were still arguing that inflation could be tackled by central incomes control.

# New Treasury moves to curb spending

By Peter Riddell, Economics Correspondent

THE DEFEAT in the Commons and withdrawal of the Government of a number of proposals to cut public expenditure have led to intensive discussions between the Treasury and other Departments to prevent potential over-spending in the coming financial year 1977-78.

The main problems have arisen over proposals from the Department of Health and Social Security, though there is also a possible difficulty over redundancy rebates within the Department of Employment's budget.

The amount directly involved totals at least £50m in 1977-78, and more than £50m in the following financial year. In addition, requests are starting to come through for further spending which had been in the annual Expenditure White Paper published at the end of last month. A heated debate has, for example, developed within Whitehall about support for the shipbuilding sector.

The potential over-spending does not pose any serious threat to the White Paper plans yet since there is time to seek offsetting cuts elsewhere.

Anyway, the amounts concerned so far are probably more than balanced by lower debt interest payments resulting from both a smaller borrowing requirement and a faster decline in interest rates than originally projected.

This does, however, highlight the pressures building up on the White Paper targets even before the start of the financial year.

Mr. Joel Barnett, the Chief Secretary to the Treasury, and his officials are reported to be taking a tough line to ensure that any over-spending is offset. But one spending Department is believed to be resisting cuts in its own area rather than elsewhere.

**Pressures**

The Treasury has repeatedly stressed its determination to keep spending within the limits of White Paper programmes and contingency funds. It has a specific aim to allow for additional expenditure beyond original plans—as well as within cash limits on money outlays.

This aim has been achieved with considerable success in the current financial year but it could be as, if not more, difficult to succeed again in 1977-78 in view of the political pressures for spending in order to stimulate the economy given unemployment prospects.

The reserve for 1977-78 of £560m, at 1976 survey prices is anyway smaller than that allowed for in the current financial year.

The possible over-spending has arisen mainly because of the Government's difficulties in the Commons. A proposal to restrict the unemployment benefit entitlement of those with occupational pensions of a certain size was defeated in a Commons committee, and has not been restored.

A proposal to recoup from insurance companies the full cost to the National Health Service of treating road accident cases, also included in the fully spent budget, has had to be dropped because of practical difficulties. This would have saved at least £20m in 1977-78, and £40m in a full year.

Only about £2m has been offset so far by cuts in centrally-financed health services, such as training and research.

The Department of Employment is deciding what to do after the defeat in the Commons by one vote on second reading of a Bill to reduce the rebate payable to an employer from the redundancy fund. This would have saved £15m in 1977-78.

While they were at the station, Special Branch police searched Mr. Campbell's flat in Brighton. It is thought that the police inquiries relate to information on the detonation of terrorist bombs in Northern Ireland using radio, but the police would make no official comment.

All three have been active supporters of Mr. Hosenball and Mr. Agee, who have recently been served with deportation orders for specified activities prejudicial to national security.

Mr. Campbell, an Oxford graduate, supplied much of the material for a controversial article which Mr. Hosenball wrote in 'Time Out' on the Government Communications Centre in Cambridge. They have said that this article contained nothing which could not be obtained from published sources.

## Three on Official Secrets charges

FINANCIAL TIMES REPORTER

THREE supporters of Philip Agee and Mark Hosenball, the Americans who face deportation, were charged under the Official Secrets Act last night. Police said the three would appear at Tottenham Magistrates' Court this morning. Meanwhile they were kept in custody at Muswell Hill police station, where they have been questioned.

Mr. John Ashley Berry, a 32-year-old van driver living in Muswell Hill, is charged with communicating classified information to unauthorised persons contrary to the Official Secrets Act, 1911.

The other two are Mr. Duncan Campbell, a 24-year-old expert who lives in Brighton, and Crispin Aubrey, aged 31, a Time Out reporter living in Islington. They are charged with receiving classified information. After being held incommunicado since Friday the three were last night allowed to see their lawyers.

The three men were brought into Muswell Hill police station on Friday evening after a meeting in Mr. Berry's house.

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**'Clamping down'**

Mr. Andrew was a colleague of Mr. Hosenball, who has since joined the Evening Standard. The Ministry of Defence has confirmed that Mr. Berry is a former soldier. He is believed to have been in the Royal Signals, where he was expert in military communications.

Mr. Tim Gopill, organiser of the defence campaign, said they were going to do everything possible to ensure that the men were given bail.

He said: "The police cannot charge Agee and Hosenball because they are foreigners and threatened with deportation. But they have looked at the people working with them and they are clamping down on them. The whole affair has rebounded on the police."

The police action has been strongly condemned by a number of Left-wing Labour MPs who are hoping to raise the matter in the Commons today.

Mr. Robin Corbett, MP for Mersey Ferret, said it looked like "a well-timed attempt to harass or intimidate the campaign against the deportation of Agee and Hosenball and to influence the Commons debate on Tuesday in the Home Secretary's favour."

Mr. Corbett, secretary of the Parliamentary Labour Party civil liberties group, said he wanted an urgent meeting with Mr. Nigel Pender, the Home Secretary, this morning. He said: "The detention of these three men follows a series of petty thefts of documents from the Agee-Hosenball defence committee and other incidents."

Warning against "destructive wrangling" on both the right and left wings of the party, he said: "If we fall into this trap, our minority Government will fall."

Mrs. Maureen Colquhoun, treasurer of the Labour Party and Labour MP for Northampton North, faces a threat by some members of her local party to replace her because of her recent remarks that Labour should heed Kenneth Powell's speeches on immigrants.

He demanded: "How can we expect to succeed in by-elections—or in the county elections coming in May—if the voice of the NEC is constantly raised against our Government?"

But Mr. Rodgers said, the "legitimate left" of the Tribune Group should not allow itself to become "a Trojan horse for the wreckers."

As the moderate campaign was being launched, Mr. Roy Ward, the party's general secretary, on Saturday renewed his appeal for an end to internal party squabbles.

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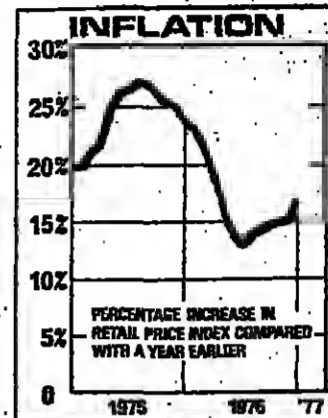
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## THE LEX COLUMN

# The need to make ED18 work



Almost half of the discussion period allowed by the Morphet Steering Group following the publication of ED18 has now elapsed, and inflation accounting is in no danger of losing its reputation as a fiercely controversial subject. As has been argued in this column before, ED18 is far from being a perfect solution to the problem. But some of the criticism now being levelled at it goes beyond trying to strengthen its weak points, and could undermine the whole programme for introducing a comprehensive system of inflation accounting. One method—the accountants' current purchasing power proposal—has already been abandoned, and it is hard to see what could survive the wreckage if ED18 goes the same way as ED8. Suggestions that inflation accounting could be reduced to one of two adjustments to historical cost accounts are simply not taking the subject seriously enough.

**Unpleasant**

The underlying difficulty that the Morphet Group now faces is that the benefits of inflation accounting have already been handed out—and only the difficult, tedious and unflattering parts remain to be tackled. Companies were originally attracted by the prospects of winning tax relief on depreciation and stock appreciation, both of which had effectively been conceded by late 1974. The next step was to obtain price code relaxations which came, in large measure, last summer. It is likely that the new price code arrangements—which will supersede the present code next August—will also be based upon a concept of inflation accounting.

But now companies are faced with the need to publish much less impressive current cost profit figures, and in many cases (but, to be fair, by no means all) are showing reluctance to do so. The standard excuse is that such figures might be "misleading" while inflation accounting is still a matter for debate. Companies are certainly entitled to wonder why they should risk damaging their share prices, and hence possibly their access to the capital market.

Where there is an incentive, of course, the attitude can be quite different. In sharp contrast to industrial companies the banks are complaining that ED18 should be amended to allow them to make much larger deductions from their pre-tax profits. One carrot here is the chance of more favourable tax treatment, and the clearing banks are also nervous that their profits will look unduly high in relation to the current cost earnings of industry.

The preoccupation of companies with short term advantage is understandable enough (and as it happens, the banks have a good case) but for the accounting profession the issue is really one of longer term credibility. Recently the estimates of company profits which emerge from the national income accounts have been trending seriously from the trends which are indicated by company reports. Fortunately for the company sector the Government has been more impressed by its own estimates, and has made concessions accordingly. The stock market, meantime, has drastically revised its ideas about the quality of published historical cost earnings. But in the process the status of audited accounts has been severely diminished.

**Real profits**

If, of course, it is a different system of accounting does nothing in itself to change economic reality—it simply throws up different figures. And company managers are quick to claim that they already take full note of inflation accounting for internal purposes. Yet it is reasonable to suppose that the sharp fall in real profit-ability of British industry in the past few years had been more fully exposed to public scrutiny

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the outcome would have been little less, unfortunately.

**Racal**

The fate of Racal's contested bid for Milgo Electronics of Florida should be within the next 48 hours there is now a good chance the U.K. company will get control. The decision by Applied Digital Data Systems has in choosing who per cent of Milgo against Over 50 per cent for Racal agreeing to let take control of Milgo exchange for a minority in the enlarged group. It seems that the present represents Racal's final offer. ADDS has to choose whether to take the cash or to remain a minority holder in a dried so long as it remains in the air. But ever happens Racal is going ahead with its rights-issue in the near—probably next week—means that a substantial higher dividend payment assured for 1977-78. plain; last week's power in the share price. No that level the market capitalisation is £140m., so an issue may not raise much more than £15m. can be absorbed.

Full control of Milgo about £37m. on the terms. This is being financed by a dollar loan from Bank International which rent interest rates will be about 7 1/2 per cent. In Milgo will bring about of debt into the Racal sheet. But the group holdings will amount to £30m; after the rights its net assets, which are to only £24m. last May, be substantially increased by the issue and by current retentions of maybe £13m.

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